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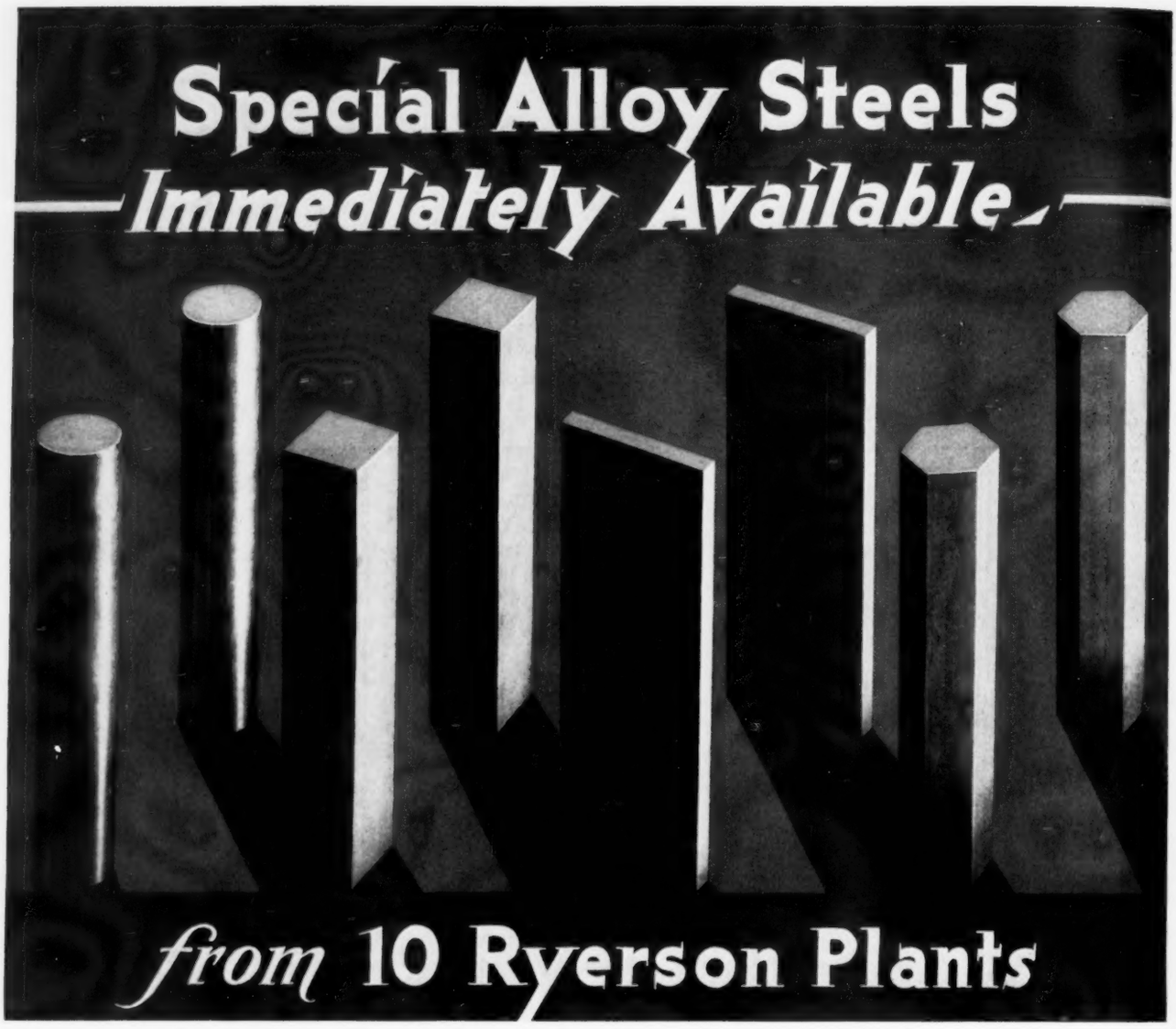

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RYERSON STEEL SERVICE

As the Editor Views the News

ALTHOUGH the steel code has been in force a year (p. 11), it still is too early to appraise its effect fairly. Superficially, one can find much to praise and much to condemn. Under NRA the American Iron and Steel institute was transformed from an ornamental to a utilitarian organization. A new, strong leadership sprung into being. Certain problems, such as public relations, labor policies, pricing methods, commercial practices, etc., were given more intelligent attention than at any previous time in the industry's history. In stimulating action along these lines, NRA helped to dislodge steel from its seat of smug complacency. Perhaps this was NRA's greatest service to the steel industry.

• • •

On the debit side are numerous serious charges against NRA. Its handling of the labor provisions of the code was erratic, and frequently unjust. At times the results of its bungling on labor relations came dangerously near to outweighing all code benefits. Its shifty attitude on price policy was disconcerting and harmful. Its policy of attempting to discredit the industry before the public by slanderous statements was childish and unwarranted. Moreover, below the surface are strong currents, set in motion by NRA, whose ultimate effect cannot be weighed until the final balance is struck years hence.

Can't Balance Books Now

• • •

However, it is a mistake to appraise NRA on the basis of the steel code, which with the cotton textile, automobile, coal and other codes of major industries, was framed and is being administered under conditions more favorable than those surrounding the codes of smaller industries. The codes of first rank industries function under the eyes of the ablest NRA authorities, while the codes of the smaller groups are handled largely by subordinates, who unfortunately, are being shifted from one job to another so frequently that they have little chance to do effective work. Since the great majority of manufacturers are operating under these last named codes, it is important that the promised reorganization of NRA (p. 20) will provide for marked improvement in their administration. A clearer division of authority, a much higher caliber of personnel and greater all around efficiency in NRA are essential.

Appraise NRA By Small Codes

• • •

One of NRA's chief troubles arises from its desire, apparently derived from the early brain trusters, to mix into every detail of the operation of industry. A reader of The Blue Eagle, NRA's weekly house organ, will wonder how industry managed to exist before the new deal came into existence. For instance from The Blue Eagle we learn that President Roosevelt has signed an executive order "establishing an apprenticeship agency, authorized to control indentured contracts and all relations between employers and apprentices." This order was prompted by the recommendations of an apprentice committee. We read that employers are to guarantee apprentices at least 2000 hours of "reasonably continuous employment." This and all other provisions of the order are the outcome of a three months study of apprenticeship by the committee.

Pearls of Wisdom

• • •

The point of this and hundreds of similar unwarranted activities of the government is that the "studies" are simply a rehash of experience which is far more familiar to industry than it ever will be to anyone in government office. The new dealers seem to labor under the impression that these "studies" are priceless to industry and vital to the successful operation of NRA. In reality the "studies," with possibly a few exceptions, are about on a par with a high school graduation thesis. They contribute nothing to industry's knowledge, and cannot help NRA. They represent an unwarranted waste of our money. NRA, and in fact most of the alphabetical units, could well dispense with hundreds of these investigators.

Bureaucracy At Its Worst

E. L. Shaner

Steel Labor Board Sifting Complaints; Election Is Hit

LABOR trouble cast a shadow over a wide range of industry last week when the national steel labor relations board sat in Pittsburgh on three cases involving representation of steel workers by the Amalgamated Association of Iron, Steel and Tin Workers, the Republic Steel Corp. was forced by a misinterpretation of its position to explain that it has not recognized the Amalgamated association, some of the plants of the Aluminum Co. of America were closed by a general walkout, and a textile strike involving up to 500,000 workers was threatened for Sept. 1.

Reckoning its score at the end of last week, when it concluded three hearings in the Pittsburgh district, the national steel labor relations board was credited with one victory, one defeat, and one tie.

The victory was at the Apollo Steel Co., Apollo, Pa. At a hearing Tuesday the Amalgamated association pressed its claim to representing workers in the Apollo sheet mills, claiming 614 out of 1050 employes.

Over the protest of W. J. Guthrie, vice president and counsel for Apollo, an election was ordered for Aug. 27, but on Friday Mr. Guthrie filed a letter with the board stating in effect that upon investigation the company has found that a majority of its workers are Amalgamated members and therefore it would meet with the local lodge for considering any questions properly subject to collective bargaining.

APOLLO PROTECTS MINORITY

Apollo, however, in order to preserve the rights of the minority, requested sanction to meet with representatives of the minority. This, Apollo officials said, makes the election ordered for Aug. 27 unnecessary.

On Thursday the board heard charges by the Amalgamated that the West Virginia Rail Co., Huntington W. Va., had refused to bargain collectively with its members. At the conclusion of the hearing no action was taken, but on Friday John Meek, attorney for the company, declared that the company would resist by every legal means an order for a collective bargaining election at Huntington, thereby strongly implying a court fight and possibly the first actual test of the board's authority.

Sandwiched in between the Apollo and the West Virginia Rail cases was the issue raised at the Standard Tin Plate Co., Canonsburg, Pa., a subsidiary of the Continental Can Co. Though the mill has always made Amalgamated contracts, the contention of the company is that barely 20 per cent of its employes are union members. The net result by the end of the week was a conference between Standard and Amalgamated officers, but no definite decision was reached.

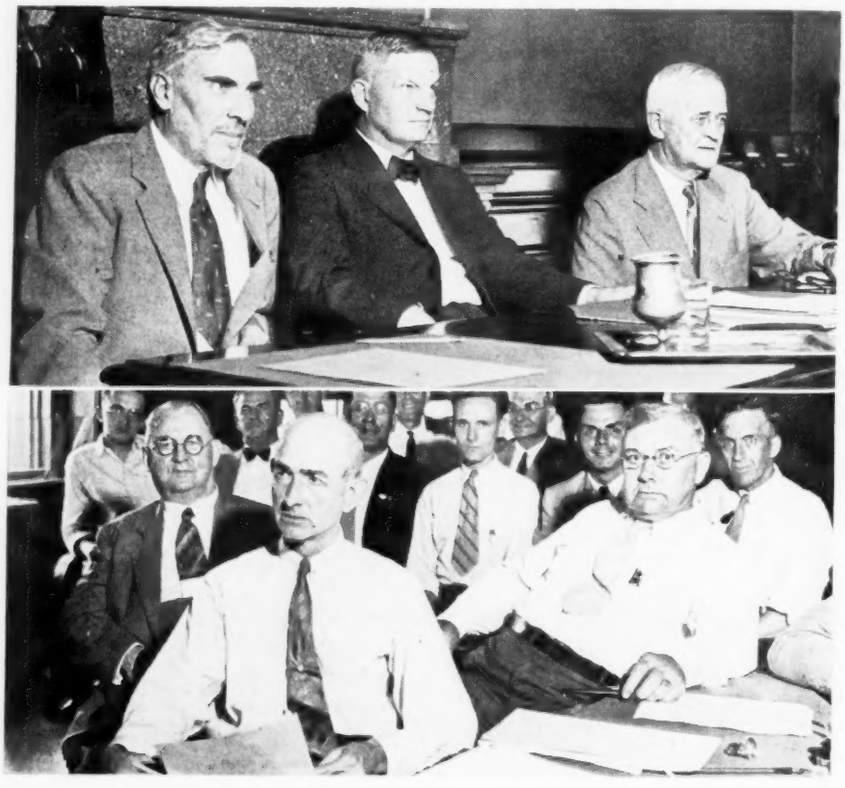
Before leaving Pittsburgh Saturday morning for Portsmouth, O., to consider a case there involving the Wheeling Steel Co., to be heard Monday, the board appointed a federal conciliator to try to adjust the strike at the Greer Steel Co., Dover, O.

Following the refusal of the Republic Steel Corp. to renew contracts with the Amalgamated at its Warren and Niles, O., plants on account of the danger of radical leadership of the Amalgamated, the matter was threshed out before the steel labor board at Washington, resulting in a letter by Republic to the board confirming its policy that it would continue existing wages, hours, and working conditions as favorable as the Amalgamated scale, or wages paid by competitors in the Mahoning valley.

By agreement, neither Republic nor the Amalgamated was to make a statement, that by Chairman Stacy being found to cover the situation, but conclusions were drawn in the press that the letter of Republic was tantamount to formal recognition. Said Tom M. Girdler, chairman of Republic, last week: "We have renewed no contract nor do we have any contract with the Amalgamated association."

CHECKOFF IS NEW DEMAND

Ever since last winter there have been rumblings of discontent at several of the Aluminum company plants. However, by last Monday a general walkout had been called and some 15,000 workers of the company went out. Most severely affected were the company's key plants at New Kensington, Pa., Massena, N. Y.,



NSLRB *AT FIRST SESSION IN PITTSBURGH: In the upper picture are shown the three members of the national steel labor relations board, left to right, Dr. James Mullenbach, Judge Walter P. Stacy (chairman), and Admiral Henry A. Wiley. Below is shown part of the group that faced this labor bench. In the foreground is Charlton Ogburn, of New York, counsel for the Amalgamated Association of Iron, Steel and Tin Workers. At the left is Michael F. Tighe, president of the Amalgmated, and at the right Edward W. Miller, a vice president*

and Alcoa, Tenn., mainly the former.

For a while Aluminum officials thought they would be able to operate finishing departments in many of the mills. They pointed with pride to their foresight in laying by a huge stock of semifinished aluminum—some 300,000,000 pounds of aluminum ingot, valued at around $30,000,000, and constituting a three-and-a-half year supply.

But strikers locked a picket line tighter than a drum around the plants. No one was permitted to enter, nor were supplies. At one division a few men were caught in the plant and turned to greasing valuable machinery which might have rusted. To get them supplies, Aluminum's management resorted to the ails and in one case paid $360 post- to get a few food necessities of hrough the pickets.

mid-week federal authorities taken cognizance of the seriousness of the situation and by Thurs- government efforts at a settlent were centered in Pittsburgh. ed Keightly, United States labor partment conciliator, began to review the case with Aluminum offiials late in the week in an effort to ettle the strike.

Leaders of the aluminum strike sprang something new by demanding the checkoff system for collecting union dues.

BEGIN TO REDUCE PAYROLLS

Their operations scaled down in most cases to less than half the June peak, steelmakers last week began retrenching. One Mahoning valley producer ordered adjustments in salaries of employes on a monthy or bonus basis, to conform with current schedules. Another reduced weekly hours of this class of employes, in preference to layoffs or reductions in base salaries.

¶Steel labor board will hold a hearing at Detroit, Aug. 22, on the question of collective bargaining between the Great Lakes Steel Corp., Ecorse, Mich., a division of the National Steel Corp., and its employes.

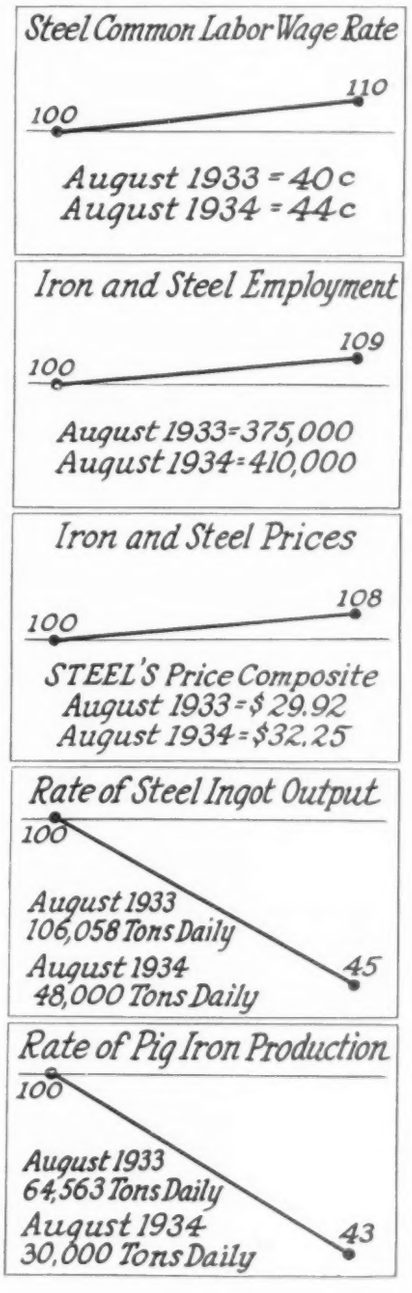
Steel Code

STEEL code resolution No. A2 by the American Iron and Steel institute, went into effect Aug. 16, clarifying and amending provisions relating to interest charges on invoices after the expiration of the free credit period. The resolution fixes the minimum rate of interest to be charged and collected after the expiration of the period at 6 per cent, with an exception in the case of contracts with state or municipal governments, where the terms provide for the retention of a specified percentage of the contract price for a certain period after delivery of ma-

(*Please turn to Third Column*)

One Year of Steel Under NRA Code

SUNDAY, Aug. 19, marked the first anniversary of the adoption of the steel code. Following the public hearing in Washington July 31, 1933, the President signed the code Aug. 19, making it effective on that date. At the conclusion of the 60-day trial period Nov. 17 the code was extended to May 31, 1934. A second extension was made to June 11, when the present revised code became operative. Comparisons of important indicators of the industry at the beginning and end of the first year under NRA are given graphically below.



(*Concluded from First Column*)

terial. Interest of less than $1 in any month since May, 1934 may be waived.

¶Under commercial resolution No. A 30, adopted at the recent meeting of the Institute directors, attention is called to section 3 of act approved by congress last March, which requires all profits on naval or aircraft work in excess of 10 per cent of the total contract price to be paid to the United States treasury. Compliance with the code does not prohibit a producer from agreeing in its contract to the provisions of the law, it is indicated.

¶The institute will issue a new handbook of extras about Sept. 1, probably copyrighted, and loose-leaf to permit easier revision.

Basing Point

ROBERT GREGG, president of the Tennessee Coal, Iron & Railroad Co., a subsidiary of the United States Steel Corp., defended the differential of $3 a ton at Birmingham over Pittsburgh on structural shapes, sheets, wire and wire products, in a statement last week.

Complaint against this differential was registered recently with the federal trade commission by the Southern Association of Steel Buyers and Consumers, of which W. C. Martin, Vulcan Rivet & Bolt Corp., Birmingham, Ala., is president. (STEEL, July 16, p. 12) The trade commission is now investigating.

According to Mr. Gregg, while the cost of producing pig iron is lower in the South, the difference in analysis actually makes southern iron more expensive to the consumer. Frequent roll changing, because of uncertain and inadaquate demand, also contributes to high costs. Present methods of pricing in the Birmingham district are no different from those which have prevailed for years, Mr. Gregg points out.

Iron Ore

A COMPROMISE between the state of Minnesota and the iron ore companies being sued for $1,750,000 delinquent taxes was suggested last week by the presiding judge of a court of five district judges in session in Duluth. Lawyers representing the litigants held a conference, but pending further consideration the court proceeded to take testimony.

The Oliver Iron Mining Co., subsidiary of the United States Steel Corp., is the chief defendant in the suit to test the legality of Minnesota's taxing methods, joined with 20 other defendants.

Some of the testimony by expert witnesses touched on the life of iron ore reserves. Dr. William O. Hotch-

kiss, president, Michigan College of Mining and Technology, stated that there is enough "iron-bearing formation" in the Lake Superior district to supply the steel industry for 2000 years, if beneficiation is carried forward successfully.

He pointed to the government's geological surveys, according to which there is 450,000,000,000 tons of iron ore formation, and that 67,000,000,000 tons has an iron content of 35 per cent or more.

Though it was not part of Dr. Hotchkiss' testimony, some of the Minnesota mining communities have been using iron ore tax money to "ballyhoo" for the St. Lawrence waterway, despite the fact iron ore companies declare that this would open the door to foreign supplies and thus prove harmful to the lake ore district. Dr. Hotchkiss testified that the waterway "might depress the price of ore."

Guy E. Diehl, Oliver's general mining engineer, estimated the life of the merchantable grades of iron ore on the Mesabi range as 38 years, based on demand from 1927 to 1931.

Meetings

OVERSEAS foundrymen visiting the forthcoming fifth international foundry congress, to be held in Philadelphia, Oct. 22-26, in conjunction with the American Foundrymen's association, will have opportunity to inspect practically all phases of castings manufacture in their stay in this country from Oct. 10 to Oct. 27.

A pre-convention tour from Oct. 10 to 22 will take foreign visitors from New York to Buffalo, Chicago, Detroit, Cleveland, Pittsburgh and Washington, with options to Milwaukee, Saginaw, Mich., and other cities.

At this international foundry congress England will contribute a paper on "Steel Castings," by Dr. W. H. Hatfield; Czechoslovakia on "Some Aspects of Physical Chemistry of Steelmaking," by Dr. P. Herasymenko and Dr. E. Valenta; France on "High Test Cast Iron," by R. P. Lemoine; Belgium on "Fluidity of Cast Iron," by Belgian Technical Foundry association; and Italy on "The Chemical Composition of Common Cast Iron for Boilers," by G. Sirovich and G. Vanzetti.

MACHINE TOOL TRADE TO MEET

Associated Machine Tool Dealers, of which Harry Barney, of the Barney Machinery Co., Pittsburgh, is secretary-treasurer, has scheduled its annual meeting Sept. 26-28 in Chicago. The opening day is scheduled for a meeting of all members of the trade, regardless of membership. Meetings probably will be held at the Olympia Fields Country club.

¶New England Foundrymen's association held its annual outing Aug. 8 at the Pomham club near Providence, R. I., attended by 100 members and guests. The committee in charge of the outing included Walter M. Saunders Jr., analytical and consulting chemist, official chemist of the association, Providence, chairman; Edward F. Parks, Universal Winding Co.; Charles E. Andrews, Whitehead Bros. Co.; Leroy E. Sherman, Brown & Sharpe Mfg. Co.; Charles Colvin, Colvin Foundry Co.; Fred Clark, Whitehead Bros. Co., and W. G. Rich, Providence Gas Co.

Financial

FINANCIAL reports by Republic Steel Corp., Allegheny Steel Co., Granite City Steel Co., Continental Steel Corp. and Ludlum Steel Co., supplementing reports from other producers published in the two preceding issues of STEEL, afford more complete comparisons.

Sixteen integrated steelmakers, having a combined annual ingot capacity of 59,527,400 tons, or 87 per cent of the country's total, made $20,809,262 in the second quarter, whereas they lost $6,809,836 in the first quarter. In the second quarter of 1933 these 16 companies piled up a deficit of $14,646,887.

For the first half year, 19 steelmakers having an aggregate capacity of 61,132,400 tons, or 89 per cent of the country's capacity, report an aggregate net profit of $15,628,293 contrasted with a deficit of $49,268,478 in the first half of 1933. Fifteen of these 19 companies (the four missing are small ones) experienced a deficit of $65,885,650 in the first half of 1932.

REPUBLIC IN BLACK $864,125

Republic Steel Corp., Youngstown, O., reports net profit of $864,125 in the second quarter, compared with net loss of $58,682 in the first quarter, and loss of $407,452 in the second quarter of 1933. The first half experience of Republic thus is a net profit of $805,443, contrasted with a net loss of $2,929,020 in the first half of 1933.

This showing for the second quarter was the best since the first report made by Republic in April, 1930, despite the fact that deductions for plant maintenance and repairs were $3,270,043, against only $2,428,494 in the first quarter.

This showing too was in the face of mounting operating costs, wage increases alone having added approximately $1,000,000 to the company's works payrolls. Second quarter wage payments by Republic exceeded $10,500,000.

¶Granite City Steel Co., Granite City, Ill., showed net profit of $218,686 in the second quarter, against loss of $18,441 in the preceding quarter, and net profit of $111,079 in the second quarter of 1933. Net profit for the six months ended June 30 was $200,245, compared with $30,754 in the same period of 1933.

¶National Enameling & Stamping Co., Milwaukee, reports net profit of $210,889 for the six months ended June 30, compared with net loss of $34,760 in the first half of 1933.

¶Continental Steel Corp., Kokomo, Ind., shows net profit of $480,153 for the first six months of 1934, compared with loss of $59,871 in the preceding year.

ALLEGHENY INCREASES NET

Allegheny Steel Co., Brackenridge, Pa., had net profit of $365,880 in the second quarter contrasted with $282,917 in the second quarter last year.

¶National Supply Co. and subsidiaries, including Spang-Chalfant & Co. Inc., Pittsburgh, reports for six months ended June 30 a net profit of $241,187 before Spang-Chalfant preferred dividends, which were not declared. This compares with net loss of $1,956,142 in the first six months of 1933 on the same basis.

Spang-Chalfant, reporting independently, shows profit of $624,444 in the second quarter, compared with loss of $37,391 in the preceding quarter, and loss of $414,142 in the second quarter of 1933. In the first half of 1934 it had a net profit of $661,835, contrasted with net loss of $706,294 in the same period of 1933.

Steel Index Is Ready

The index to Volume 94 of STEEL, *for the first six months of* 1934, *now is ready for distribution. Copies will be sent to all subscribers requesting them.*

Labor

BEGINNING of a drive against the piece-work system in all metal-working shops in the Cleveland district is sensed in the strike declared by the Automobile Mechanics' union against all Ford automobile dealers in Cuyahoga county (Cleveland). A flat hourly rate and minimum weekly wage guarantees are demanded. The Metal Trades council, representing all union workers in the metal industries, apparently intends to use the strike as an entering wedge against all piece-work systems.

¶In its issue of July 23, p. 15, STEEL referred to a cast iron pipe manufacturer in Alabama underbidding a Cleveland foundry by 40 per cent on valve boxes for the Cleveland

water department, the difference being alleged due to code requirements of 85 cents per hour for labor in Cleveland, compared with 32 cents in Alabama. The comparison should have been between 40 cents per hour in the North and 32 cents per hour in the South, these being the respective rates for common labor.

Production

STEEL production went off sharply last week to 21½ per cent, a loss of 6 points, owing to decreases in all districts except Birmingham, which registered a 5-point advance. In the major districts, Chicago and Pittsburgh both declined 4 points, eastern Pennsylvania 1½, and Youngstown 16. Indications are that there will be not much change this week and there is some prospect that the industry may do well to retain this rate. Details for various districts follow:

Youngstown—Down 16 points to 22 per cent, as retrenchment has cut deeply into schedules at practically all works. The Ohio Works of the Carnegie Steel Co. went down last week for an indefinite period, one blast furnace stack being banked; the McDonald mills and Upper Works continue some finishing activities. Youngstown Sheet & Tube Co. resumed at its pipe mills at Campbell. The Republic Steel Corp. is operating at about 28 per cent. Sharon Steel Hoop Co. has one out of six open hearths on at Lowellville.

Pittsburgh—Dropped 4 points last week to 15 per cent, a condition caused chiefly by shutdown of open hearths in the plants of at least four major producers here. Closed open-hearth departments of American Rolling Mill Co., Butler, Pa.; Pittsburgh Steel Co., at Monessen, Pa.; National Tube Co., at McKeesport, Pa.; and the Duquesne works of Carnegie Steel Co., accounted chiefly for the decline. Operations at 15 per cent in this district are at their lowest level since last January. According to schedules for this week, no improvement is expected.

Fifteen out of 60 steelworks blast furnaces are now in operation here with the following individual rates: Carnegie Steel Co., 8 of 32; Jones & Laughlin Steel Corp., 3 of 11; Bethlehem Steel Co., at Johnstown, Pa., 2 of 7; and American Steel & Wire Co., at Donora, Pa., and Pittsburgh Crucible Steel Co., at Midland, Pa., each 1 of 2. Neither National Tube Co. nor Pittsburgh Steel Co. now have any blast furnaces active.

Chicago—Dropped 4 points to 28 per cent last week, cancelling the gains that had been made since July 1. No immediate upturn in production is anticipated. Blast furnace operations are unchanged, with nine of 36 steelworks stacks currently in blast.

Cleveland-Lorain—Off 19 points to 13 per cent, due to the National Tube Co., Lorain, closing its works for two weeks. Corrigan, McKinney Steel Co. operated three open hearths, and Otis

(*Please turn to Page* 18)

NRA

THREE amendments to the approved code for the steel casting industry to take effect in 15 days were approved on Aug. 13. They relate to unfair trade practice sections of three schedules under the code, namely, miscellaneous castings, specialties, and draft gears.

¶Effective Aug. 23, the wire reinforcement industry will operate under the iron and steel code.

¶Arkansas Metal Trade association and Standard Brake Shoe & Foundry Co., Pine Bluff, Ark., requested that Arkansas be placed in the southern instead of the border states group affected by minimum wage provisions of the gray iron foundry code, at a hearing Aug. 15. This would reduce the rate from 30 cents a hour to 25-28 cents. The American Federation of Labor opposed the proposal.

¶The declaration of an emergency in the waste paper trade, decreasing minimum selling prices for various grades of waste paper for 90 days, is being watched by the scrap iron trade, which is under the master code governing waste paper.

¶Code authority for the hacksaw and plate manufacturing industry has asked NRA approval of standard lists of prices and sizes.

¶Iron and steel warehouses will begin operating under labor provisions of the NRA wholesaling code Sept. 1, the latter code having been formally extended to cover warehouses. These provisions are a 40-hour week maximum for inside labor, a 48-hour week for outside labor, and time and one-third for overtime.

Structural Code

A COMPROMISE on NRA's stand that erection of structural steel shall come under the construction code rather than the structural steel fabricating code was seen Friday as General Johnson ordered a further revision of the executive order for the structural code.

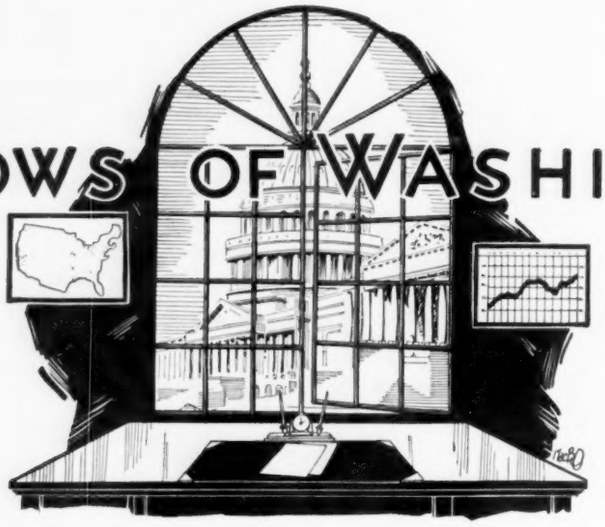
Originally approved on July 11 to become effective July 22, and then stayed to Aug. 7, and subsequently to Aug. 16, the structural code theoretically became effective last Friday.

The position of fabricators, as represented by the American Institute of Steel Construction, has been that any adjustment short of restoring to the code the original provisions governing erection would be unacceptable to them.

When the second stay terminated Thursday without an agreement having been reached between the industry and NRA, a new order was placed before the general, but this was not satisfactory and was sent back for further revision.

MARKS 50 YEARS OF MINNESOTA IRON ORE INDUSTRY: Base of granite, cap of jasper (the color of which usually is due to iron) and plaque of bronze, this monument at Tower, Minn., was dedicated July 30 in the presence of several thousand old settlers and mine workers. It overlooks the Soudan mine (a United States Steel Corp. property), Vermillion range, from which the first iron ore from Minnesota was shipped July 30, 1884. The mine was opened and operated by the Minnesota Iron Co. Some of those who participated in the opening of the mine attended the ceremony. These included W. P. Chinn, Duluth, general manager for Pickands, Mather & Co., which operates Vermillion range mines, who presided

WINDOWS OF WASHINGTON



WASHINGTON

WHILE the new dealers who are charged with the recovery of business are frantically searching for the needle, in order to inject a hypodermic before the November elections, those entrusted with the reform of business are quietly pursuing their way, maturing a program for the January session of congress.

The reformers—a committee set up by the President in June to develop this phase of the new deal—know their objectives. These are principally unemployment insurance and retirement pensions, as a means of achieving the security which the President has promised labor. The only perplexity is the method of administering them.

At present any information concerning this program of reform, which, incidentally, threatens to prove so heavy a charge upon business that much of the timidity which private capital is displaying is charged up to it, is entirely unofficial. But there are straws, including the pet theories of leading members of the committee, including Secretary of Labor Perkins.

Relating these indicators to iron and steel, something like the following appears to be in store for the industry:

The code authority for steel, now embracing the entire directorship of the American Iron and Steel institute, would be reduced to a more compact body, cloaked with greater official standing, and tied in closely with the successor to NRA.

In principle, steel would be charged with the social responsibility for substantially the same number of employes as it carried in 1929, or whatever period is chosen as the base. In 1929 the industry had about 460,000 employes, of whom 420,000 were wage earners.

All unemployed would be registered by federal authorities and a case history of each built up. Those attached to steel in 1929, or during the base period, would be regarded as its wards.

At the outset, the federal government would continue to meet in large measure the expense of sustaining these idle steel employes, but eventually the load would be transferred entirely.

Seventy or thereabouts would be declared the retirement age, and machinery set up to deduct from both payrolls and pay envelopes sufficient money to meet these charges.

Modeled after the railroad retirement board, the steel code authority would be the treasurer for these unemployment and retirement reserves, presumably to be invested in government bonds.

THIS theory that each industry should shoulder the responsibility for sustaining its peak labor load was enunciated more than a year ago when codes were in the making.

In the case of steel, the 40-hour work week was largely predicated upon a spread of work sufficient to necessitate an extra shift. So compliant has the industry been that in June, the latest month for which statistics are available, employment reached 455,966, or 99 per cent of 1929. Since then, of course, declining demand for steel has required extensive layoffs.

At the public hearing on the steel code on July 31, 1933, Miss Perkins, chief reformer of the new deal and a person with whom all industry will have to work with closely over the coming year, disclosed these leanings:

"Many corporations dipped into their surpluses and reserves during the last few years to make dividend payments. Would it not be equally wise and just to make some of these reserves available for meeting payments in lieu of wages for employes who must be laid off from time to time? . . . . The steel industry has taken the leadership in eliminating the risks of industrial accidents, it has also pioneered in stabilizing prices and dividends. I want to appeal for the same kind of leadership to assure a measure of stability for the incomes of working people. . . . It is not unreasonable to ask the iron and steel industry to be the first that will on a national scale provide unemployment reserves for its unemployed workers."

The potentialities in enlarging the powers of code authorities and centering them in Washington are enormous. The hold of government on industry would be increased, approaching that of wartime.

A flood of funds would roll into Washington. On the basis of deducting 6 per cent from payrolls for retirement pension purposes, as the railroads and their employes are compelled to under the new law, payments to a steel retirement fund in June would have totaled $2,400,000, or at the rate of almost $30,000,000 annually. The profit of the entire industry in the second quarter was about $20,000,000.

There is the matter of obsolescent industries—who would absorb their quotas of labor? One answer might be that as new industries are developed they would take over labor released by dying ones.

Technological unemployment is another hurdle. In steel, the number of wage earners decreased from 425,000 in 1923 to 420,000 in 1929, production meanwhile increasing 23 per cent due to improved processes and equipment. In England, and in the United States as well, efforts to liquidate excess labor in the coal fields have proved abortive.

It is conceivable that the handling of labor might be made more difficult. Once on a payroll, an employe would be an integral part of the industry, entitled either to a job or a dole.

Some new dealers go even further

than present quotas of labor. They maintain that in mill cities the children of most iron and steel workers cannot have the advantage of a college education, hence have a right to look to the mills for employment. Death and retirement, of course, should open up some channels, but the responsibility for the oncoming generation rests upon the industry!

Whether much or any of this comes to pass depends in some measure upon the complexion of the coming congress. But steel can count on the new deal to attempt to force unemployment insurance and retirement pensions; it can also depend upon it that it will be expected to provide either a job or relief to a quota assigned to it. The only uncertainty, as the new dealers see it, is the machinery.

THEY will only be disappointed who see a retreat from the new deal in the assignment of Eugene R. Black, now retiring as governor of the federal reserve board, to smooth down bankers and assure money it can safely rear its head, the various proposals for reorganizing NRA, and the Richberg study of methods for revamping and co-ordinating recovery measures.

Adroit politician that he is, the President may shift his course a little, but anyone who has seen his expressive hands knows that once he has put them to the plow there is no turning back. In his Green Bay speech he made the commitment to proceed with the reform phase of the new deal, including the security for workers previously mentioned.

That can be accepted at face value. Indeed, if there is any characteristic of the Roosevelt administration it is the frankness with which it forecasts its movements. So sure is he that he has a grand slam hand that the President almost with an air of bravado broadcasts his intentions.

Consider some of the cross currents. The reception accorded the President on his trip from Portland to Washington convinced him that the great masses still are for him. On the other hand, he is not unaware of the rising tide of criticism and the increasing freedom with which even some Democratic partisans are questioning aspects of the new deal.

Nor is the President ignorant of the fact that business has slumped more than seasonally this summer and that the chances of an upturn in the fall are slim. At the same time, the comparatively good showing of business, especially steel, in the second quarter is proof to him that the present timidity of private capital is unwarranted.

His gesture in dispatching Mr. Black to make the rounds of bankers involves no retreat from any policy—thus far; it is merely to substitute the President's view of the new deal for what Washington believes is the distorted vision of capital. So far as inflation is concerned, a comparison of the permissive powers of the President and their little actual use makes a strong showing.

There is some opinion that the President will shortly let loose a blast against radicals, as a complement to his address at Green Bay reaffirming his liberalism. It is believed that conservatives will derive some assurance from an apparent middle-of-the-road policy.

But this also is true. At all times the President has left the back door open. He likes to think of himself as a crack quarterback, carrying the ball and picking the holes. The goal line is his objective. If he was downed going around right end with NRA, if he finds the drought throwing AAA back for a loss, he still has two more downs and the goal line—the reform of business—still is his objective.

Especially with the November elections coming on he may elect to vary the attack a little, but it will be not so much a retreat from the new deal as an effort to convince the public that it works. The public, after all, has the votes.

BEFORE leaving for a 2-week vacation General Johnson last week offered his ideas for reorganization. They revolve around a board of directors, perhaps three each representing the industrial, consumer and labor groups.

In the arm chair at the head of the table the general sees himself—provided the President wants him. Right now it is a 100 to 1 shot that, to appease labor if nothing else, some outstanding business man will be chosen.

There is less opinion that NRA will be broken up, with parts accruing to the federal trade commission and the department of justice. Certainly it will remain as an independent agency if the code authorities are to be set up for purposes of administering unemployment insurance and retirement pensions. Some arrangement, however, must be made to end the controversy over the enforcement of antitrust laws. It might be consistent to adopt a new name, assuming recovery to have been effected.

If the political amenities are observed, the President will offer the general some other post, and the probabilities are that he will refuse. A number of industries are reporting anxious to harness his driving power to their problems.

It has been a treat for Washington to follow the trial, by proxy, of the general for violating section 7a of NIRA and refusing collective bargaining to his own employes, culminating in the discharge of the employe chiefly concerned with organizing. It is not conceivable that the national labor relations board will spank the general; his retirement and the reorganization of NRA may prove an "out" for both sides.

So far as NRA touches outside labor troubles, it continues to carry water on both shoulders. Continuing the Harriman mills controversy, wherein Division Administrator Glancy, regarded as an industrialist, outsmarted Division Administrator Berry, a union leader, and restored the Blue Eagle, General Johnson last week upheld Mr. Glancy. But he immediately warned that the mills would have to negotiate with the strikers' committee—which placated the labor element.

WASHINGTON is not staying awake nights worrying over the warning of the American Federation of Labor that if private capital does not come out of hiding and supply jobs for the 10,000,000—more or less—idle the government may have to proceed even further with the socialization of industry.

The federation knows that it is lucky that labor has not had to operate under a blue eagle, with a representative of industry sitting on the code authority for it, and that no list of unfair practices has been drafted for it.

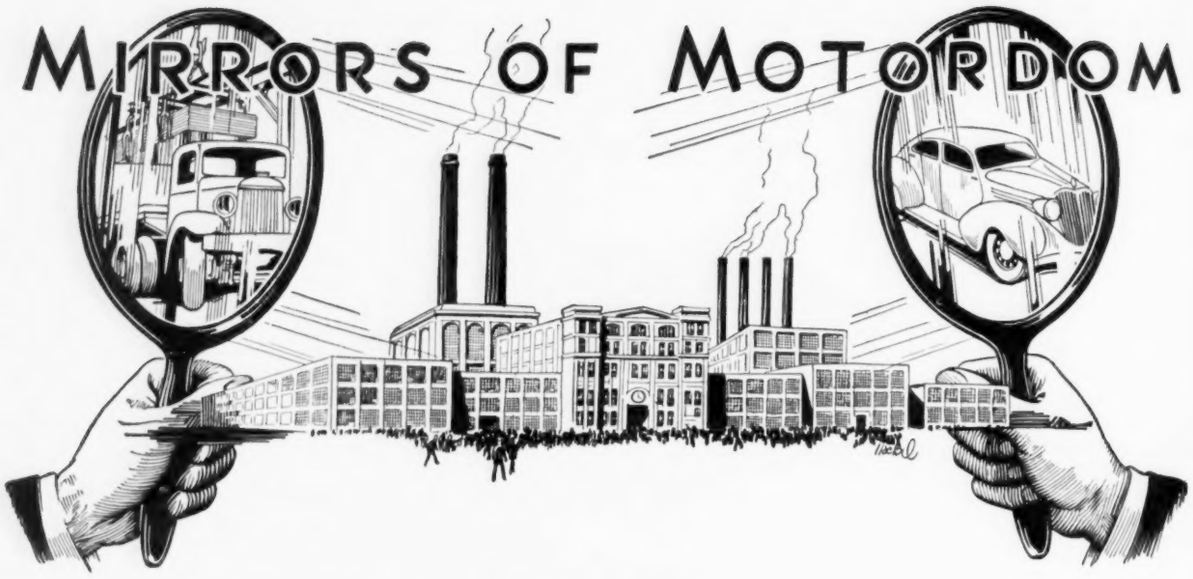
Already through codes, the government lays a compelling hand on industry. The government is a partner in most banks through the RFC and has a voice in the management of banks and life insurance companies bursting with money which is apprehensive of long-term commitments. Government credit has been substituted for private credit to farmers, railroads and home owners.

Further socialization would involve a control that inevitably would draw a tighter rein on labor, and the federation is not unaware of what has happened to labor in both Russia and Italy.

It is true that deep within the federation there is some bitterness over the application of the famous section 7a. This is not because labor has not made any gains, but because the bright picture painted for labor's benefit in framing the recovery act has not been wholly realized. Labor may grouse at the administration, but it will vote right in November. It would not be good politics for the federation openly to see eye to eye with everything the administration is doing. And the feeling toward General Johnson for his treatment of the Amalgamated association will not down.

The federation also is talking less of the communistic threat to its leadership. The fact is that the boring-in of reds constitutes a distinct menace, but industry is not disturbed to the point of making common cause with the federation.

MIRRORS OF MOTORDOM



DETROIT

EXCEPTING Memorial and Independence day weeks, production of automobiles has not fallen below 50,000 units in any week since a full start was made on 1934 models early in the year, but last week's decline to slightly less than 54,000 units is foreboding.

At that, production has given ground grudgingly. Beginning with the week ended July 14, which was a rebound from the holiday shutdown just previously, assemblies have eased off for five weeks, but the decline from 66,000 as of July 14 to 53,854 units last week is only 20 per cent—remarkably small considering the general recession in business.

Chevrolet, which has completed plans for a new type of gasoline tank for 1935 has eased off from 4000 daily 5 days a week to about 3500 a day. Almost half are commercial cars, Chevrolet having registered 76,929 trucks in the first half year compared with 40,417 a year ago. The new Chevrolet assembly plant at Baltimore will have an annual capacity of 80,000 cars.

Other Makers Throttling Down

Ford is down to about 3000 units a day 5 days a week, compared with 3500 the week preceding. Canadian production holds at about 225 cars daily. Having built up a stock of finished and semifinished steel estimated at 100,000 tons, Ford is expected to reduce its steelmaking operations Sept. 1. Ford probably will shut down more than one day over the Labor day period. A new type cross member is in a state of development indicating its adoption for 1935 models.

Following a slight spurt a week ago, Plymouth production tapered off last week to about 6200 units, two assembly lines operating 5 days. In the week ended Aug. 11 Plymouth retail sales were 7563, against only 6717 in the comparable week of 1933. July production of Plymouths totaled 34,896; August will approximate 30,000.

Dodge activity last week resulted in 2000 jobs, commercial and pleasure, the daily rate being 500. Incidentally, Briggs Body has closed on a substantial portion of Dodge and Plymouth work for 1935, and the Briggs plant in Hamtramck which has virtually been closed since 1929 is being reopened.

The Budd company at Philadelphia has closed on one of the coupe jobs for Dodge next year involving the stamping of the top deck, back panel and door panel in one piece, whereas the usual practice has been to stamp only the top deck and back panel together. The goal of body makers is literally to stamp a body in two pieces, lengthwise of the car, and some are approaching it.

Rumors that E. L. Cord will consolidate at least one large and two small units of the industry continue to be heard. Meanwhile, it is understood that Auburn is fabricating an iceless refrigerator steel shell, and may enter this market shortly. Production of Auburn automobiles holds at about 75 cars a week.

Studebaker, which was not operating its assembly lines week before last, resumed at its previous rate of 300 a day, 5 days. Its August schedule of 4500 units will be achieved by three weeks of 1500 models each. The Studebaker models offered recently insure no further changes in the line until show time.

Terraplane-Hudson stepped up a trifle in the past week, going from 850 units the preceding week to 900. The trend, however, is downward along with the rest of the industry. Compared with an output of 3500 in July. Terraplane-Hudson assemblies in August will top 4000 by a narrow margin.

Following a 3-week inventory period, Cadillac-LaSalle resumed last week on the basis of 136 units for the week. This compares with an estimate of sales totaling 800 for this month. Of the other makes in the Cadillac field, Lincoln has been producing about 30 units weekly, Packard about 75, and Pierce-Arrow has been closed.

Pontiac Continues the Eight

Pontiac, which will continue its eight next year and whose motor is not the lineal descendant of the former Oakland, as erroneously stated in this column in the July 2 issue, assembled about 1000 units last week. Pontiac's August schedule of 6000 cars is only 400 short of the total production for July.

Packard has started to assemble 1935 models of the eights and twelves, with a schedule of 600 for this month. It will be close to Sept. 1 before any shipments are made to dealers, and early in September before the formal announcement is made. The smaller model is not now expected on the market before late this year, at the earliest.

Automobile Production

Passenger Cars and Trucks—U. S. only
By Department of Commerce

	1932	1933	1934
January	119,344	130,087	156,907
February	117,418	106,888	231,707
March	118,959	118,002	331,263
April	148,326	180,713	354,745
May	184,295	218,347	331,641
June	183,106	253,387	308,051
July	109,143	229,357	*255,000

*Estimated.

Estimated by *Cram's Reports*

Week Ended	
Aug. 4	58,554
Aug. 11	57,539
Aug. 18	53,854

Industrial Men in the Day's News

G. N. HARMAN has been elected a vice president of Continental Roll & Steel Foundry Co., East Chicago, Ind., to be located at the company's Pittsburgh division. He formerly was Chicago representative of United Engineering & Foundry Co., Pittsburgh, and has been in the sales department of the Continental company since 1932.

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Russell M. Allen, formerly district sales manager at Chicago for the Allegheny Steel Co., Brackenridge, Pa., has been promoted to the position of assistant general manager of sales with headquarters at the main offices of the company in Brackenridge.

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H. K. Pollard, long actively engaged in the production and sale of steel castings, has joined the sales staff of the Treadwell Engineering Co., Easton, Pa.

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William Miller, senior vice president of the Pyle-National Co., Chicago, manufacturer of railroad supplies, has been elected president, succeeding the late L. H. Vilas.

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Paul F. Voigt, vice president, Allegheny Steel Co., Brackenridge, Pa., recently returned from a three months' vacation in California.

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Joseph Wilkoff, of the Wilkoff Co., Youngstown, O., has been elected a member of the national board of directors of the Institute of Scrap Iron and Steel Inc., New York, to serve out the unexpired term of his late brother, Ike Wilkoff.

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Ralph C. Harden has been appointed manager of packing sales in the mechanical goods division of the United States Rubber Co., New York. During the past 15 years he has held several important positions with Johns-Manville Sales Corp., the latest of which was western regional vice president in charge of sales with headquarters in Chicago.

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Leonard S. Horner, formerly assistant deputy and deputy administrator of the NRA for 87 codes in the capital goods industries of MAPI (Machinery and Allied Products institute), and the basic code and supplementary codes of fabricated metal products, has been appointed New England representative for the Fabricated Metal Products federation, of Washington. It is understood his mission is to assist its member associations in matters covering codes and industrial problems of manufacturers arising out of organized effort. For more than 20 years, Mr. Horner was connected with manufacturing problems, as president of the Niles-Bement Pond Co., as vice president of the Acme Wire Co., and as a member of executive committee and director of Crocker-Wheeler Electric Mfg. Co. His headquarters will be at New Haven, Conn.

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A. V. B. Gilbert, formerly purchasing agent for the Atlanta, Birmingham & Coast railroad, Atlanta, Ga., has been appointed treasurer.

C. T. Coleman succeeds him as purchasing agent.

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A. R. Forsyth, executive vice president of the Gulf States Steel Co., Birmingham, Ala., has been chosen a member of the industrial advisory committee appointed by the federal reserve bank of Atlanta, Ga.

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J. Burton Ayres, active in shipping circles on the Great Lakes since 1900, has been named general manager of the Great Lakes Steamship Co. and president and assistant treasurer of the Toledo Shipbuilding Co. He began his career with the United States Transportation Co., which by 1910 or ten years after its organization operated a fleet of 21 steel steamers in the movement of iron ore, coal and grain. The company's name later was changed to the Great Lakes Steamship Co.

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Ivan V. Boyev has been elected chairman of the board of the Amtorg Trading Corp., trade representative of the Russian Soviet government in the United States with main offices in New York City. At present assistant to people's commissar for foreign trade of the Soviet government, he will succeed Peter A. Bogdanov, who will continue in office until Mr. Boyev arrives in this country early in September. Mr. Bogdanov then will return to Russia.

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J. C. Redmond, formerly with the bureau of standards, Washington, has been appointed assistant analytical chemist at Battelle Memorial institute, Columbus, O.

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Samuel J. Nock, formerly auditor for Mackintosh-Hemphill Co., Pitts-

Promoted in Pittsburgh Office of Carnegie Steel Co.

GEORGE A. HIGGINS has been appointed assistant manager of sales in the Pittsburgh district sales office of Carnegie Steel Co. He first became affiliated with the company in 1919, in the bar division of the general sales department. He was appointed sales representative in the Pittsburgh district office in February, 1922. For the past four years he has had headquarters at Youngstown, O.

JOSEPH G. ARMSTRONG JR. has been named assistant to the manager of sales in the Pittsburgh district sales office of Carnegie Steel. He began his business career at the Duquesne works of the company in 1924, in the bar and structural sales department. Four years later, or in March, 1928, he was appointed to the post of sales representative in the Pittsburgh district office.

burgh, has been appointed secretary and treasurer of the Los Angeles railway, Los Angeles. Prior to his association with Mackintosh-Hemphill he was auditor and assistant secretary of the Pittsburgh Iron & Steel Foundries Co., which was taken over by Mackintosh-Hemphill in 1921.

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H. W. Van Benschoten, of the Knoxville Iron Co., Knoxville, Tenn., has been appointed a member of the code authority for the reinforcing materials fabricating industry, succeeding W. J. Kibler, resigned.

Production

(*Concluded from Page* 13)

Steel Co. two. No change is scheduled for this week. The Corrigan, McKinney company also has banked two of its four active blast furnaces. Sheet and strip mills in this district were idle last week, but are preparing to resume this week on part-time schedules.

Detroit—Unchanged at 77 per cent last week, with 13 out of 17 open-hearth furnaces operating. One of the two local producers, which has had all of its nine open-hearth furnaces active, is expected to take some off shortly. The other local producer continues with four of eight open-hearth furnaces.

Central eastern seaboard—Off slightly last week to 20 to 21 per cent, falling close to the low level for this year, established in the first week of July. One more open hearth is in operation than a week ago, but reduced operating schedules have more than offset this advantage. Finishing operations at most plants are now under the steelmaking rate, with some ingots being piled for stock.

New England—Down to 29 per cent last week, a loss of 9 points. With one steelworks down until after Labor Day, there are but three open hearths operating in the district.

Birmingham—Rose 5 points last week to 25 per cent, with six open-hearth furnaces producing ingots and with prospects of steady output for the present. This is the highest rate of activity since the last week of June.

Buffalo—Declined sharply to 23½ per cent last week, a loss of 10½ points from the week previous, due to four open hearths being taken off. The Lackawanna plant of Bethlehem Steel Corp. has reduced to four open hearths, Republic Steel Corp. is operating four, and Wickwire Spencer Steel Co. has one active. The Seneca sheet division of Bethlehem is operating at about 25 per cent.

Wheeling—Down 4 points to 26 per cent last week. Ten out of 39 open-hearth furnaces were active, four for one producer and six for a second. A third and fourth mill, ordinarily entering into the compilation, are both closed, these latter two involving 14 open-hearth furnaces.

Steel sheet sales, production and shipments of independent mills in July dropped considerably under the June level, according to the current report from the National Association of Flat Rolled Steel Manufacturers, Pittsburgh. Daily average shipments were 2756 net tons, compared with 10,061 tons; production 2751 tons, down from 6648 tons; and sales, 2339 tons, against 3828 tons.

Totals for July: Shipments, 85,442 tons; production, 85,286 tons; sales, 72,517 tons. Total sheet capacity in the United States for the month was approximately 550,000 tons, and the capacity on which the association's figures are based was 325,000 tons.

Ohio Scrap Dealers Would Be Taxed as Manufacturers

Cincinnati chapter of the Institute of Scrap Iron and Steel Inc. will initiate a case in the Ohio courts to establish the scrap iron industry as a manufacturing industry under the Ohio tax laws. Personal property tax laws of Ohio impose a tax on "manufacturers" inventory and equipment based on 50 per cent of their true value, and on "merchants" inventory and equipment based on 65 per cent of their true value.

Scrap iron dealers have been classified as merchants. Benjamin Schwartz, director general of the Institute, advised that the "processing and preparation" of scrap would legally qualify the scrap iron industry under the Ohio laws and court decisions, as a "manufacturing" industry, for taxation purposes.

Died:

FRANK D. HEATH, 54, district manager of sales at Detroit for Jones & Laughlin Steel Corp., Pittsburgh, in Detroit, Aug. 11, after an illness of several weeks. A veteran sales employe of Jones & Laughlin, he served that company continuously for 32 years. Born in New England, he first became identified with the Boston sales office of the company as a salesman under A. B. Marble. For 13 years he traveled through the New England district out of the Boston office, but in 1915, when Jones & Laughlin instituted direct mill sales representation in the Detroit district, Mr. Heath was appointed district sales manager there. He was a member of several Detroit clubs.

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Fred Jeide, 48, proprietor of the Precision Tool Co., Milwaukee, in that city Aug. 12.

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R. C. Barton, 74, one of the organizers of the National Cast Iron Pipe Co., Birmingham, Ala., at his home in that city, Aug. 6.

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George T. Ogden, 43, sales engineer for C. E. Squires Co., manufacturer of steam specialties, at his home in Cleveland, Aug. 14.

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Floyd B. Harrington, 50, president of the Michigan Sheet Metal Works, Lansing, Mich., in that city, Aug. 1. He was active in a number of other businesses in Lansing.

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E. M. Hall, 55, president, Hall-Hodges Inc., Norfolk, Va., jobber in engineering and contracting supplies, in that city recently. He had been in the supply business for 25 years.

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Hunter B. Fishkorn, 63, president of Hunter B. Fishkorn Inc., Richmond, Va., pipe jobber, in that city, July 21. He had been identified with the jobbing business for about 40 years.

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George R. Rosensteel, assistant manager of orders, Jones & Laughlin Steel Corp., Pittsburgh, at his home in Pittsburgh, Aug. 13. He had been employed with Jones & Laughlin since 1898.

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Albert B. Dick Sr., 78, Chicago manufacturer and inventor of the mimeograph, at his home in Lake Forest, Ill., Aug. 15. He was president of the A. B. Dick Co., Chicago, until last spring.

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James A. Barnes, 85, founder and president of the former J. A. Barnes Machine Co., Oshkosh, Wis., in that city, Aug. 6. Born in Suffolk, England, he emigrated to America as a child and settled in Oshkosh in 1867. The machinery business was established in 1886, Mr. Barnes retiring in 1917.

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James J. Devitt, 48, president, Birmingham Ornamental Iron Co., in Veterans hospital, Tuscaloosa, Ala., Aug. 14. He went to Birmingham 12 years ago from Minnesota to become manager of the ornamental iron department of Ingalls Iron Works and later organized the Birmingham Ornamental Iron Co.

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William H. Osborne, 80, widely known in the malleable casting industry, in Milwaukee, Aug. 13. He founded the Wisconsin Malleable Iron Co. in 1878 and later established the Lakeside Malleable Castings Co. at Racine, Wis., being at his death chairman of the board. His son, William V. Osborne, is active manager of the Racine business. The Milwaukee company has been inactive since its plant experienced a fire several years ago.

Here and There in Industry

WYCKOFF DRAWN STEEL CO. has announced removal of its general offices from Ambridge, Pa., to suite 1308, First National Bank building, Pittsburgh, effective as of Aug. 20.

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A. C. Daft, Pittsburgh, dealer in alloys and scrap, has moved from 603 to 902 Liberty-Ninth building-Pittsburgh.

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Reed Roller Bit Co., Houston, Tex., has opened a sales office at 1402 South Owasso street, Tulsa, Okla., in charge of W. J. Nutto.

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Universal Power Corp., 1719 Clarkstone road, Cleveland, has appointed Metalweld Inc., 2617 Hunting Park avenue, Philadelphia, its distributor in the Philadelphia district for its arc welders, electrodes and supplies.

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Oil Center Tool Co., Houston, Tex., manufacturer of oilfield equipment, has increased its capital to $100,000. A. J. Penick is president and K. T. Penick is secretary-treasurer. They are sole owners.

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Edward Valve & Mfg. Co. Inc., East Chicago, Ind., has appointed McGregor Engineering Co., Midco building, Tulsa, Okla., its sales representative in Oklahoma, northern Arkansas and the Texas panhandle.

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Hayes Equipment Mfg. Co., Wichita, Kans., manufacturer of gasoline dispensing equipment, has taken over the filling station equipment division of the San Antonio Machine & Supply Co., San Antonio, Tex.

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Muskogee Iron Works, Muskogee, Okla., has formed an organization for the manufacture and distribution of steel derricks under its own name. The company for some time has manufactured derricks for other companies. A branch is located at 1115 First National Bank building, Dallas, Tex.

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Kelvinator Corp., Detroit, made shipments to customers in July totaling 19,752 units, an increase over June shipments and a gain of 28 per cent over those of July, 1933. Ten months of the present fiscal year show shipments 31 per cent in excess of those of the entire preceding fiscal year.

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Iowa Mfg. Co., Cedar Rapids, Iowa, is working two shifts on orders from the United States forest service for 14 large rock-crushing plants to be used in national parks, and also on orders from Canada and Mexico. Howard Hall, founder of the company in 1921, is president. Kenneth Lindsay is vice president and sales manager.

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Philadelphia Steel Sales Co., Philadelphia, moved its offices from the Commercial Trust building to room 1514, Lincoln-Liberty building, Broad and Chestnut streets, Aug. 15. The company represents the Corrigan, McKinney Steel Co., Cleveland, Otis Steel Co., Cleveland, and the Wrought Iron Co. of America, Lebanon, Pa.

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S. F. Bowser & Co. Inc., Fort Wayne, Ind., manufacturer of gasoline and oil measuring and distributing devices, has been reorganized with capital of $1,392,300. Stock consists of 30,000 shares preferred and 6500 shares class B preferred, both of $100 par value, and 80,000 shares common, no par. The latter is the only voting stock.

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J. W. Mull Jr., 333 North Pennsylvania street, Indianapolis, manufacturers' representative for production tools, has opened an office at 6007 Euclid avenue, Cleveland, in charge of F. J. Kern. The latter formerly was superintendent for the National Acme Co., later factory manager for Gabriel Mfg. Co., and for the past three years superintendent for the Accurate Parts Co., all of Cleveland.

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Made-Rite Appliance Corp., Sandusky, O., and Weinig Products Co., 1814 East Fortieth street, Cleveland, have been merged. Both companies manufacture electric toasters, curling irons and dryers. Negotiations are on for acquisition of the plant of the former Ohio Motor Co. at Sandusky, O., but it is not definitely decided whether the present plants will be continued in operation.

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Louis Allis Co., Milwaukee, manufacturer of electric motors and generators, finds its total sales for first half of 1934 were more than treble the same period last year. The company specializes in quick delivery service on urgent orders and recently manufactured, tested and shipped four 100-horsepower special motors to the Fort Peck government project in Montana in seven working days.

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Ampco Metal Inc., 3820 West Burnham street, Milwaukee, has received an order from Mesta Machine Co., Pittsburgh, for 55,000 pounds of heat-treated aluminum bronze rolling mill bearing segments for installation in the new Youngstown mill of the Youngstown Sheet & Tube Co., Youngstown, O. Recently the United Engineering & Foundry Co., Pittsburgh, ordered 50,000 pounds for the new sheet mill of the Ford Motor Co., Dearborn, Mich. C. J. Zaiser is president.

Calendar of Forthcoming Conventions

Sept. 3-6—Institute of Metals (British) Annual autumn meeting in Manchester, England. G. Shaw Scott, 36, Victoria street, Westminster, London, S.W.1, is secretary.

Sept. 18-20—Association of Iron and Steel Electrical Engineers. Annual convention and exposition at Hotel Statler, Cleveland. John F. Kelly, Empire building, Pittsburgh, is secretary.

Sept. 20-22—National Industrial Advertisers association. Annual convention at Hotel Netherland Plaza, Cincinnati. Allan Beach, Littleford Bros. Co., Cincinnati, is secretary.

Oct. 1-5—National Safety council. Twenty-third annual safety congress at Hotel Cleveland, Cleveland. W. H. Cameron, 20 North Wacker drive, Chicago, is secretary.

Oct. 1-5—American Society for Metals. Sixteenth National Metal congress at Hotel Pennsylvania, New York. W. H. Eisenman, 7016 Euclid avenue, Cleveland, is secretary.

Oct. 1-5—Sixteenth National Metal exposition. Port Authority building, New York. W. H. Eisenman, 7016 Euclid avenue, Cleveland, is manager.

Oct. 1-5—Wire association. Annual meeting at Hotel New Yorker, New York. Richard E. Brown, 17 East Forty-second street, New York, is secretary.

Oct. 1-5—American Welding society. Fourteenth fall meeting at Hotel New Yorker, New York. M. M. Kelly, 33 West Thirty-ninth street, New York, is secretary.

Oct. 1-5—American Institute of Mining and Metallurgical Engineers. Fall meetings of Institute of Metals and Iron and Steel divisions at Hotel Pennsylvania, New York. John T. Breunich, 29 West Thirty-ninth street, New York, is assistant secretary.

Oct. 1-5—American Society of Mechanical Engineers. Fall meeting of Iron and Steel division at Hotel Pennsylvania, New York. P. T. Wetter, 29 West Thirty-ninth street, New York, is assistant secretary.

Oct. 10-11—Farm Equipment institute. Annual convention at Blackstone hotel, Chicago. Robert A. Jones, 608 South Dearborn street, Chicago, is secretary.

Oct. 22-26—American Foundrymen's association. Thirty-eighth annual convention and exposition at Convention Hall, Philadelphia. C. E. Hoyt, 222 West Adams street, Chicago, is executive secretary.

Oct. 29-Nov. 2—American Gas association. Seventeenth annual convention and exposition at Auditorium, Atlantic City, N. J. Kurwin R. Boyes, 420 Lexington avenue, New York, is secretary.

EDITORIAL

Make NRA Constructive, Not Destructive!

IN ATTEMPTING to reorganize NRA upon a practical basis, the government administration is entering belatedly upon a task which is of immediate concern to the majority of companies in the iron, steel and metalworking industries.

The need of reorganization became apparent at the meeting of code authorities early in March. To the credit of General Johnson, it may be said that he sensed the true state of affairs shortly after the proceedings of that noteworthy series of sessions revealed the inability of industry to safely absorb another dose of brain trust medicine. The denouement prompted the General to consider two corrective measures. The first was the appointment of two committees—one on consumer goods industries and one on durable goods industries—to suggest improvements in NRA policy and administration. The second was General Johnson's own study of the problem, which in conjunction with the recommendations of the committees, presumably led to the nine-point program of reorganization which he communicated to President Roosevelt on June 26.

Subsequently Donald Richberg, general counsel of NRA, gave up that position to work out a compromise between federal trade commission and NRA policies on the relation of the federal government to industry. Mr. Richberg, as executive director of the industrial emergency committee, will sit in a key position in the meeting on NRA reorganization scheduled for Tuesday.

Reorganization Should Involve Restatement of Objectives and Continuity of Purpose

We hope, for the sake of the thousands of manufacturers who have suffered keenly from the absence of definite policy in NRA administration, that the approaching discussions will lead to tangible improvement, not only in the definition of clear-cut objectives, but also in sincere, honest and co-operative administration.

In order to assure this much needed improvement, those responsible for NRA will be obliged to address their attention chiefly to the problems of NRA which are concerned with recovery, and to discard—at least for the time being—those problems which have to do with social reform.

If one doubts the wisdom of this last statement, let him consider how the inclusion of Section 7a in NIRA and the subsequent lack of consistent policy in administering it have handicapped the functioning of NRA at every turn. Section 7a was of no service in spreading work; it contributed nothing to employment; it had nothing to do with increasing wages. Apparently its sponsors believed it would establish the principle of collective bargaining, but it failed even in this objective. Instead, it created strife, fostered discrimination, and in the end reacted against the interests of the very employes it was expected to help. More than that, it has proved to be one of the most destructive influences working against the successful functioning of NRA.

Administration of NRA Should Be Immune To Half-Baked Political Criticism

The framers of the new policy for NRA also should consider the importance of continuity in administering rules and interpretations. The experience of the functioning of codes to date should have furnished guidance for future policy. Unfortunately that experience is practically useless, for the simple reason that no rule was permitted to stand unchanged long enough to permit anyone to determine whether it was good or bad. Whenever a Darrow, a Nye or a Long raised his voice in condemnation of NRA, a new rule was promulgated or a new weasel-worded interpretation issued to appease the critic. Inconsistency, trickery, evasion, vacillation—these impaired the functioning of NRA.

Industry, the innocent victim of much of this unnecessary hodge podge of chaos, has been unbelievably patient. Company executives and members of code authorities have endured insult after insult from inexperienced underlings at Washington, whose only apparent conception of their jobs was to imitate what they thought was the dominating theme of certain new deal spokesmen, namely "bear down hard on industry." The good work of hundreds of well-meaning, conscientious officials in NRA has been offset in considerable measure by the insulting, domineering tactics of these incompetents.

Industry will welcome a thorough reorganization. It will appreciate particularly the divorce of reform measures from recovery provisions, the restatement of clear cut objectives, the maintenance of continuity in policy and its interpretation, and the elimination of vindictive personnel.

THE BUSINESS TREND

F. D. R. Gestures To Left, To Right, Perplex Business

THAT slight but perceptible lift in sentiment which was ushered in with the early days of August was more than offset by the reaction to President Roosevelt's attitude as expressed in addresses delivered enroute from Portland to Washington. These seemed to indicate that he returned from vacation with the conviction that political expediency called for further gestures to the silver bloc and to other radical factions.

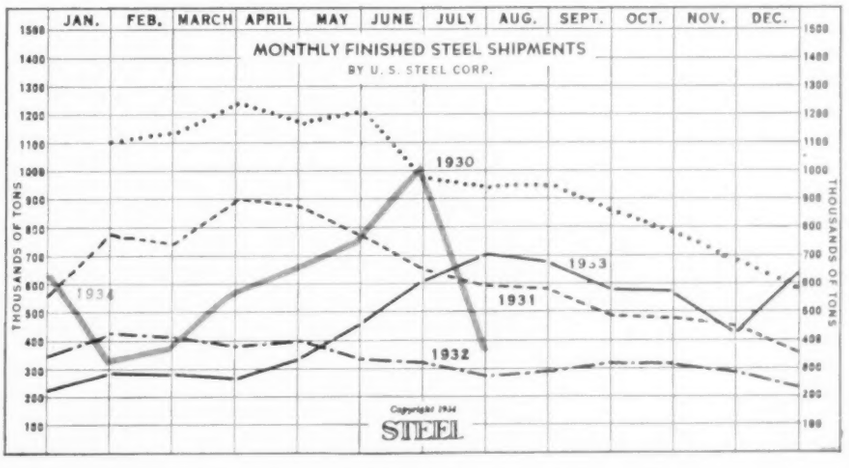
Naturally this complicated the outlook. Early last week business sentiment bogged down with the thought that President Roosevelt had turned positively to the left. Instead of the impetus to confidence, which would have attended a more orthodox attitude on the part of the Chief Executive, we witnessed a new threat to confidence.

Meanwhile, the President at Washington was familiarizing himself with the state of the nation. Perhaps he discovered that conditions were not as he had pictured them in his Green Bay speech. At any rate, on Wednesday evening he held out the olive branch to bankers by delegating Eugene R. Black to win the support of financial men to the recovery program. This may or may not be a swing to the right.

Industrial Activity, in Summer Doldrums, Handicapped by Washington Attitude

Industry is striving bravely to ignore the handicaps of the President's vacillating, aimless action. Volume of activity is restricted, but the tone is steady. Car loadings are holding up well. Electric power output continues at encouraging levels. Building operations are up from last year, but still ridiculously low. Steelworks operations are erratic. Automobile output is strongly resisting downward pressure.

In brief, most factors are negative, rather than positive. A strong, consistent policy in Washington would be a great stimulant to business morale.



1934 Tons	
July	369,938
June	985,337
May	745,063
April	643,009
March	588,209

1933 Tons	
July	701,322
June	603,937
May	455,302
April	335,321
March	256,793

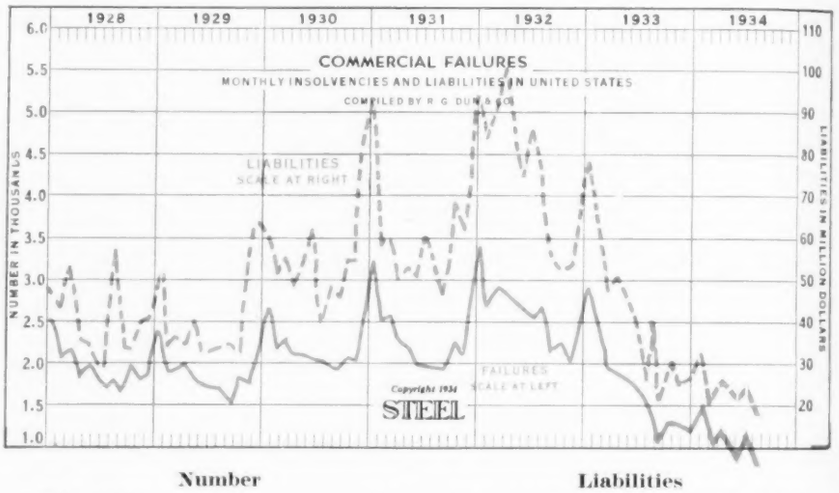
	1934	1933
August 1	$9.32	$9.00
July 1	9.23	8.33
June 1	9.14	8.02

Commodity Prices Strengthen; Recovering Spring Losses

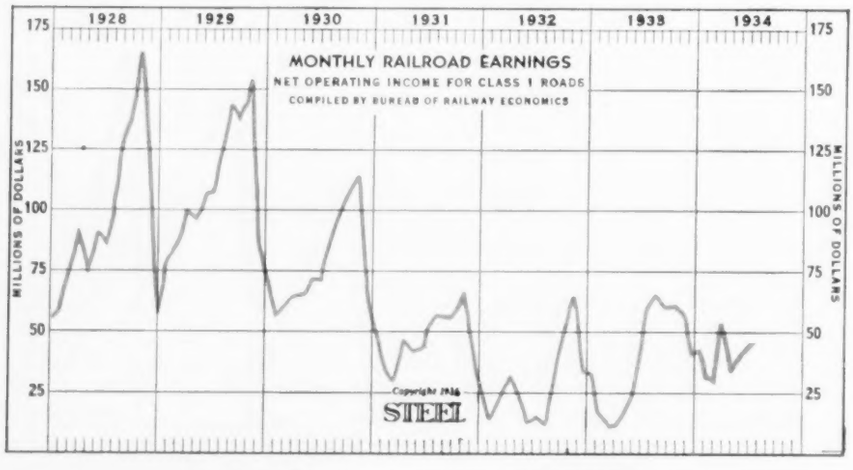
The Bradstreet index of wholesale commodity prices on Aug. 1 advanced to the highest level since December, 1930. On Aug. 1 the index stood at $9.32, as compared with $9.23 in the preceding month. This was the second monthly increase, and it more than offset the declines registered in March, April and May. On Aug. 1, 1933 the index stood at $9.00. The index stood at $10.45 Aug. 1, 1930 at $8.79 on the same date in 1931 and $7.17 in 1932.

Commercial Failures Fall To 1920 Level

Commercial failures in the United States last month were the lowest for any previous July since 1920 and also were the lowest for any month in a similar period, according to Dun & Bradstreet Inc. Insolvencies during the seventh month number only 912, involving liabilities of $19,325,517. This compares with a total of 1033 in June with a total indebtedness of $23,868,293. In July, 1933, 1421 companies failed with liabilities amounting to $27,481,103.



	Number	Liabilities
July, 1934	912	$19,325,517
June, 1934	1033	23,868,293
July, 1933	1421	27,481,103

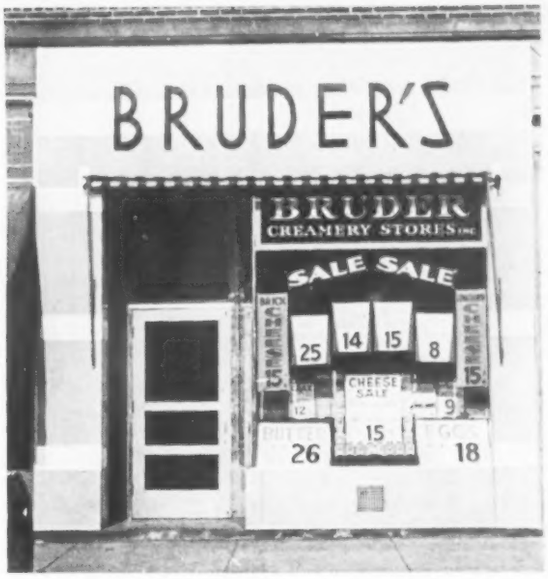


June, 1934	$41,836,301
May, 1934	39,494,978
June, 1933	59,831,293

Railroad Earnings Shrink 30 Per Cent Below Last Year

Net operating income of Class 1 railroads during June increased slightly to $41,836,301 from $39,494,978 in the preceding month but declined 30 per cent below the total of $59,831,293 reported for June, 1933. Income for the first six months of this year, however, was reported at $225,803,916, an increase of 45.9 per cent compared with the $154,728,928 earned in the like period of last year. Thirty-three class 1 roads failed to earn expenses and taxes in the first six months of 1934.

Practical Fasteners Are Essential to Success of Metal Building Exteriors



Creamery store in Cleveland renovized with green and white, porcelain-enameled steel sheet front

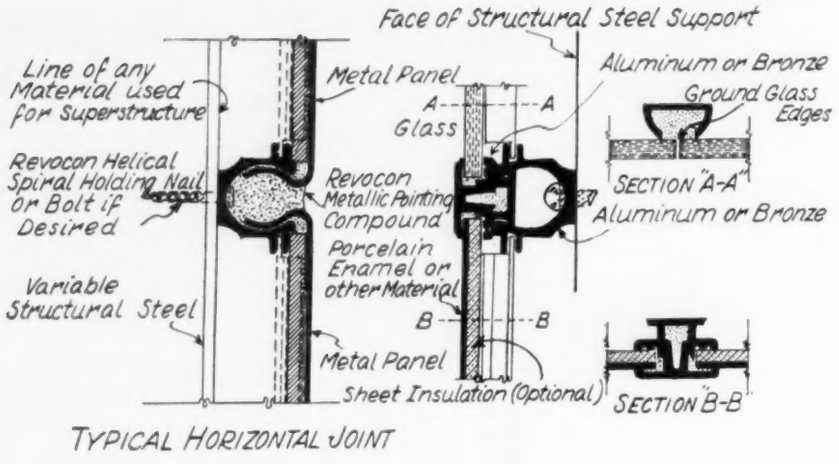
PORCELAIN-ENAMELED steel, stainless steel and other metal sheets now are being marketed by the Architectural Metals Corp., Hanna building, Cleveland, for application on buildings of all kinds in connection with its patented sections and friction moldings used to secure the sheets. Renovizing of old buildings, together with the demands of modern architecture in connection with new construction are regarded by this company as opening a wide field for this application of steel and other metals.

Two systems have been developed by the company. The first, known as the Revocon system, calls for deformed metal panels but permits the use of flat glass panels to any extent desired. The other involves the use of flat sheet steel, metal or glass panels. In the first, with deformed panels, no batten joints show on the surface, this arrangement offering scope and flexibility to the architect. Both methods involve about the same financial outlay by the builder. The company is engaged only in engineering and selling its product. It buys its metal sections and panels under contract with fabricators. Any metal or any color or texture may be had in either of these methods of exterior surfacing. A creamery store in Cleveland for instance, has been recovered with porcelain-enameled steel panels in green and white. For this job 200 square feet of No. 18 gage steel sheets were employed. They were attached to the building by means of Revocon friction moldings secured by drive screws driven into wood plugs inserted in the old brick front.

Here are some of the metals used for such applications: Stainless steel, porcelain-enameled steel, monel metal, plain or color-enameled aluminum, plain or porcelain-enameled copper and architectural bronze. Panels may be flat, corrugated, crimped or furnished with any other variation in surface texture or grain. Where large panels are required, crimping is recommended by the company as it increases stiffness and reduces light reflections. In general, size of the panels is in keeping with the proper normal scale and dimensions of the building, but 24 inches is regarded as the maximum desirable height.

In the Revocon system, which makes use of

How an oil company applied a new porcelain-enameled steel sheet surface to a service station in Ohio. Details of the fasteners which hold the sheets in place are shown on the following pages



Methods of attachment hold the key to volume application of sheet metal exteriors in the building field. These drawings show details of a system which is being successfully used

deformed panels, the holding member is a small section semicircular in shape but with a flat back so that it may be attached rigidly to the wall of the building, in the case of renovizing, or to the steel or wood uprights in the case of new construction. It is attached by means of nails, drive screws or bolts. The main holding members are placed horizontally. After the deformed panels have been pressed in place, so that they lock into the openings of two parallel horizontal members, the vertical panel edges engage with channel sections which, in turn, ride in a track on the horizontal sections. These holding members at present are extruded either from 53 S. T. 5 aluminum alloy, or from architectural bronze.

After the panels have been pressed into place, the openings in the holding members are filled with a special metallic mastic in which powdered aluminum and oil are chief constituents. Because of the leafing characteristic of aluminum, it is stated, the compound dries hard at the surface, but the interior remains plastic and oily, thus forming a permanent weather proof joint.

Panels Are Formed Over Dies

Deformed sheets used for these panels are formed on power brakes, over dies furnished by the company. The horizontal edges of the sheet are bent to conform to the annular inner surfaces of the holding members. At the same time, the vertical panel edges are bent back 3/16-inch to form stiffening edges. Corner panels are formed by cutting V-notches in the horizontal deformed edges and making a simple bend of any degree desired. The corners of all panels which are to be porcelain-enameled, are first sealed by welding or brazing.

When it is desired that glass instead of metal panels be used in this type of construction, auxiliary sections are employed. These lock into the horizontal holding members and present a longitudinal channel in which the glass slides, after which it is secured by vertical channel sections. For weatherproofing, the glass panels are set in the channel sections with metallic glazing compound.

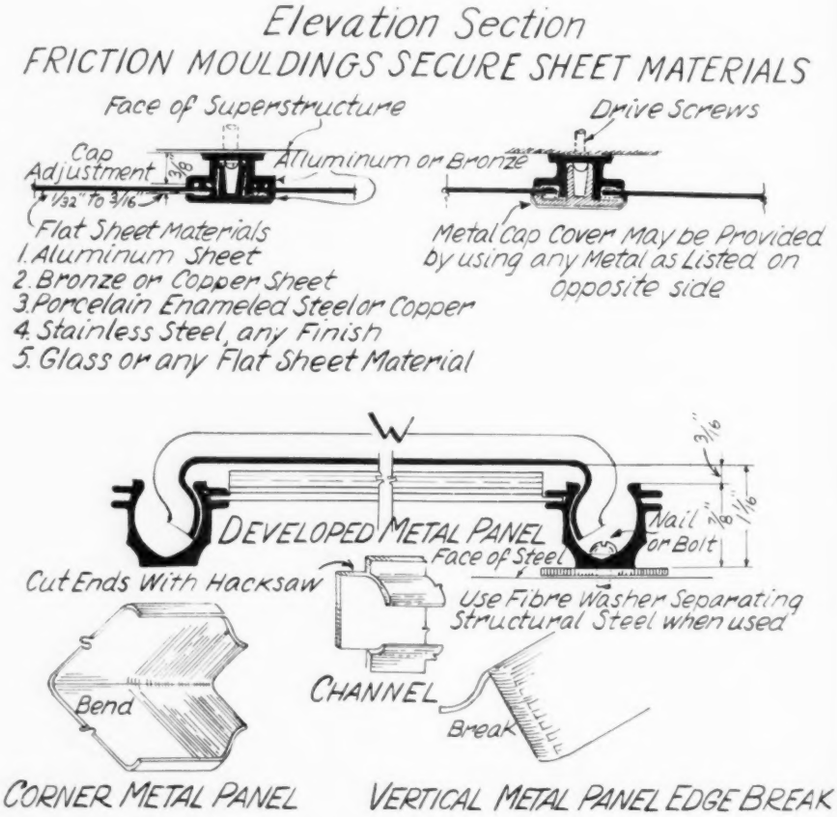
The second system developed by this company is based on a special characteristic of both aluminum and architectural bronze. In this system the holding members are in two parts, one attached to the walls or building uprights, while the other is a cap section fitting into the part thus attached. After this keeper section has been attached to the building, flat sheets of given dimensions are fitted into them, and the cap sections are pushed into place.

These two sections are extruded, either from 53 S. T. 5 aluminum alloy or from architectural bronze. The channel in the keeper section has straight sides with no taper. The portion of the cap section which enters the channel in the keeper section consists of two flanges which likewise have straight sides, excepting that they are fluted longitudinally. The two contacting parts have exactly the same width. It is a singular fact, according to the company, that although it is easy to push the one section into the other, a force of approximately 150 pounds per lineal inch is necessary to separate them.

Sections Supplied in Any Metal

In this second system, no additional sections are required for glass, which is inserted and held in exactly the same manner as the flat sheet panels. The cap section in this system may be furnished with covers made of any desired metal in light-gage sheets. Materials most frequently demanded for such covers are stainless steel and color-porcelain-enameled steel.

In both systems, Nos. 16, 18 or 20



While it is easy to push the cap section into the keeper section, as shown in this drawing, a force of approximately 150 pounds per lineal inch is necessary to pry them apart. These sections are made of aluminum alloy or architectural bronze, as in these metals this seizing value is greatest

gage steel sheets are used for porcelain-enameling. Stainless steel can be used in as light as Nos. 22 and 24 gages. Copper is specified at 24 ounces per square foot.

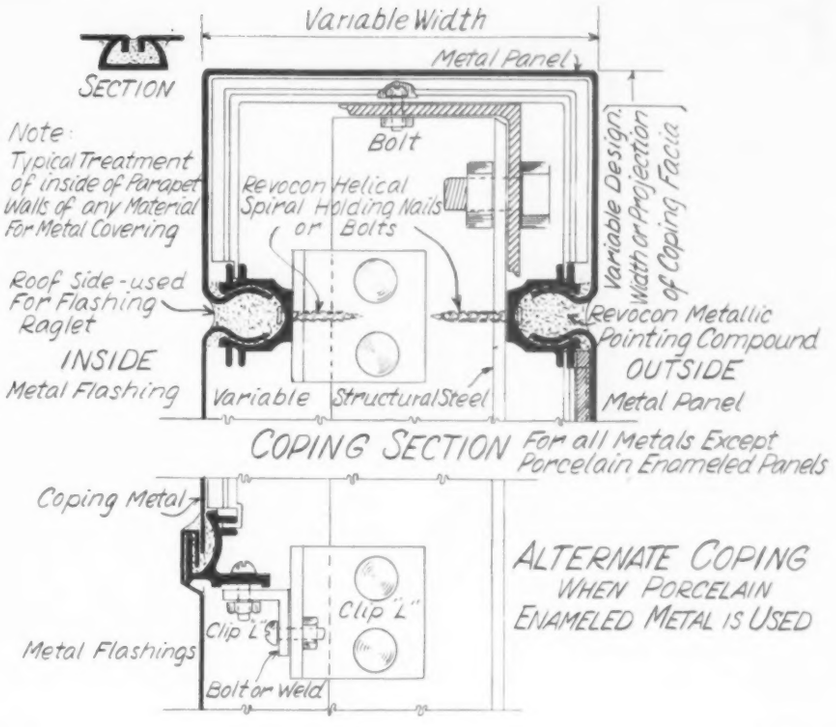
In both systems, any desired interior finish may be used, such as metal lath and plaster, metal panels, wall-board, synthetic lumber, metal tile, etc. Rigid insulating board may be used as panel backing in sizes 3/16 to ¼-inch thick; it is supported on the fins forming the track on the horizontal sections and vertically by the fins on the channel sections.

Can be Applied to Existing Fronts

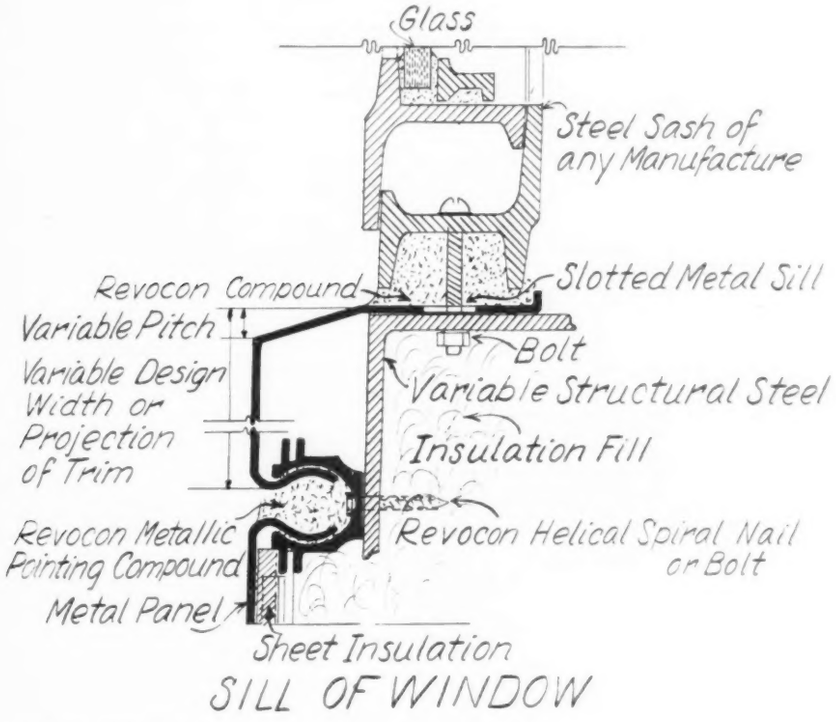
One of the advantages of either system in renovizing old buildings is that a new metal surface can be applied to an existing front and only extend ½ to 1-inch beyond the present surface. This means that it is unnecessary to go to the expense of tearing out old masonry walls. In the Revocon system, the insulating space between outside and inside surfaces is 1-inch while in the other system it is ½-inch. Research work of the company indicates that the insulation thus obtained is equal in value to that obtained with masonry walls several times as thick.

Inasmuch as the use of metals for exterior surfacing can be successful only if proper provision is made for contraction and expansion, the company has given thorough study to this phase. In both its systems, contraction and expansion take place completely in each individual panel.

"The Revocon system of applying metal in sheet form to building exteriors," says an officer of the Architectural Metals Corp., "is another example of the strides being made by the industry to develop new outlets. The tonnage which can result from the wide use of steel and other metals for this purpose warrants serious consideration being given to proposed attachment methods because this is the secret of the successful use of metal in the building field."


Variable Width
Metal Panel
SECTION
Note:
Typical Treatment of inside of Parapet Walls of any Material For Metal Covering
Bolt
Revocon Helical Spiral Holding Nails or Bolts
Variable Design Width or Projection of Coping Facia
Roof Side - used For Flashing Raglet
Revocon Metallic Pointing Compound
INSIDE Metal Flashing
Variable
Structural Steel
OUTSIDE Metal Panel
COPING SECTION For all Metals Except Porcelain Enameled Panels
Coping Metal
ALTERNATE COPING WHEN PORCELAIN ENAMELED METAL IS USED
Clip "L"
Clip "L"
Metal Flashings
Bolt or Weld

Fasteners shown in these drawings are designed for universal use and they accommodate themselves to any wall variations, such as window sills, copings, corners, etc.



Pointing compound used with these holding sections has oil and aluminum as its principal ingredients. Because of the leafing characteristic of aluminum, the compound dries hard at the surface but the interior remains plastic and oily, thus forming a permanent waterproof joint

Claims Green Paint Least Expensive Finishing Coat

Green paint is the least expensive finishing coat that may be placed on steel, says a large middle western manufacturer of heavy machinery. When customers specify a red finish, it is necessary to put on at least two and sometimes three coats. But when no color is specified, the manufacturer uses green. Only one coat of green is needed as a rule to hide completely the steel beneath. This same manufacturer is beginning to suspect that some customers are aware of this situation and specify red in order to get the benefit of additional protective coats.

Weld Broken Retort Casting

Oxyacetylene welding was employed to reclaim a large sugar refinery retort dome casting which developed a shrinkage crack in the mold. This casting represented an investment of approximately $1700. The reclamation job was accomplished at a cost of about $45, including gases, labor and all time necessary to place the dome in first-class condition.

GOOD INDUSTRIAL ILLUMINATION—

A Practical Method of Design, Installation and Measurement

BY A. H. ALLEN
Associate Editor, STEEL

EXECUTIVES and engineers who have followed this discussion on industrial lighting which began in STEEL for Aug. 13 may well be asking at this point: "All very interesting but, getting away from special lighting applications, specifically how do we know whether we have good lighting in our plants? Furthermore, if we lack in this respect, how shall we go about correcting deficiencies? In other words, what is good industrial lighting and how may it be obtained and measured? Not forgetting how much it will cost."

Research conducted by the Nela Park engineering department of the General Electric Co., Cleveland, has provided data which answer these questions for the uninitiated in readily understandable fashion. This article will present a summary of information developed by Ward Harrison and C. E. Weitz, Nela Park engineers. Complete details are available upon request.

The method of illumination design presented here is known as the "lumen method" and avoids tedious calculations, saves time and even those not experienced in lighting design, by following carefully the steps as outlined, can at once apply the data with confidence. Further advantages of this method are that the technical considerations which are important as influencing the results have been taken into account with the preparation of charts and tables and therefore automatically receive due allowance in the lighting design. These data apply primarily to interiors where standard types of reflecting equipment are used to obtain general lighting of a substantially uniform level.

There are four main factors which enter into illumination design for industrial interiors:

1. Location of outlets and adequate wiring.
2. Foot-candles required.
3. Room size and reflector characteristics.
4. Lamp size—lumen output required.

The wiring plan is the foundation of the lighting system and is the step which should be given most careful consideration. Because the cost of relighting is made up so largely of wiring costs, it is far more economical, in planning a lighting installation, to provide wiring adequate for future as well as present needs.

Change Lamps Without Rewiring

When once outlets are installed properly as regards both spacing and size of wire, a change in type of reflector or in size of lamp may be made without undue complications; but where the spacing of outlets is too great or the wiring inadequate, satisfactory results never can be obtained without extensive alterations.

The number of outlets to provide for any given area is determined by the maximum allowable spacing between lighting units and is in turn regulated by their height above the floor. Relation between height and spacing is based on the distribution of light to obtain a reasonably uniform level of illumination on the working plane.

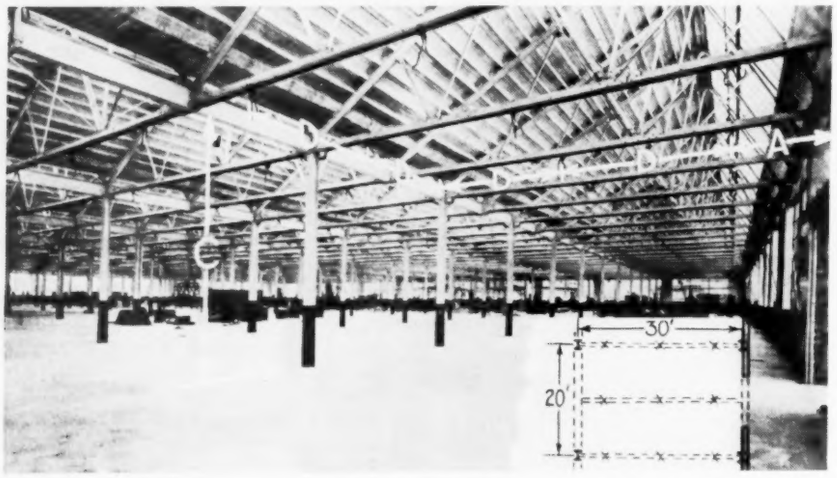
Strictly speaking, the spacing for uniform illumination on the work depends upon the height of the light source above the surface to be illuminated, but since most work surfaces are from 2½ to 3½ feet above the floor, the spacing may for practical purposes be considered a function of the mounting height of lamps above the floor. In general, a spacing in

Table I

Spacing of Outlets

Ceiling height (or height in the clear), feet (C)	Spacing between outlets		Spacing between outside outlets and wall		Approximate area per outlet (at usual spacings), square feet
	Usual, feet (D)	Maximum* (for units at ceiling), feet (D)	Aisles or storage next to wall (A)	Desks, workbenches, etc., against wall, maximum*, feet	
8	7	7½		3	50–60
9	8	8	Usually	3	60–70
10	9	9		3½	70–85
11	10	10½	one-	3½	85–100
12	10–12	12		3½–4	100–150
13	10–12	13	half	3½–4½	100–150
14	10–13	15		4–5	100–170
15	10–13	17	actual	4–5	100–170
16	10–13	19		4–6	100–170
18	10–20	21	spacing	4–6	100–400
20	18–24	24		5–7	300–500
22	20–25	27	between	5–7	400–600
24	20–30	30		6–8	400–900
26	25–30	33	units	8–9	600–900
30 and up	25–30	40		8–10	600–900

*Where it is definitely known that some form of indirect lighting will be used, the maximum spacing between outlets may be increased about two feet, and the distance from the outside outlets to the wall may be increased by one foot.



Layout of lighting outlets for a large industrial building, indicating application of data in the table above. The 13-foot clearance allows a spacing of 13 feet. For a symmetrical layout in the bays a 10-foot spacing is adopted

feet which does not substantially exceed this mounting height will result in reasonably uniform illumination. Reference to Tables I and II will show quickly the recommended spacing of outlets and mounting height of lighting units.

When lighting units are mounted as high as the ceiling or roof trusses permit, larger and more efficient lamps may be used, while fewer units—to buy, to install and to maintain—will be necessary. The ceiling height, or rather the height which units may be mounted clear of obstructions, therefore dictates the maximum permissible spacing. Where interiors are divided by columns or ceiling beams into bays, it is usually desirable because of appearance to locate the outlets symmetrically with respect to these structural sections.

Adoption of well-designed general lighting systems eliminates the need for a great many "ingenious" lighting devices. However, in certain locations, particularly in manufacturing operations, requiring high machines or peculiar machine grouping, special attention must be given to the layout of the general lighting or to the use of units supplementary to the general system.

Thus, for group lighting, units are arranged with respect to machine groups to give better direction of light and to avoid high machines cutting off light where needed. In craneways, units should be mounted on truss chords, or conduit may be hung from messenger cable, and they should be staggered to avoid the possibility of the traveling crane blocking off light from all units in the row parallel to the crane as it passes. In erecting shops in high bays, angle lighting units along the walls—20 feet high—will provide additional light for vertical surfaces. Similarly, large high machines or special operations frequently require supplementary units, mounted perhaps on nearby columns.

Some Special Applications

If the general lighting system is well planned, special bench lighting is unnecessary except where there is fine bench work requiring much higher illumination than is provided throughout the room. Some installations require special study because of peculiar requirements. Thus in the finishing and inspecting of vertical surfaces of automobile bodies, special units are required to spread a high-intensity band of light on these surfaces.

Wire size should be sufficient to meet requirements of the underwriters' code and at the same time circuits should be of suitable length to avoid excessive voltage drop. Wattage capacity per outlet may vary from 300 to 1650, depending upon the floor area per outlet, the latter ranging from 65 to 400 and over square feet. Number of outlets per circuit should be approximately as follows:

Where capacity is 300 watts or less, not more than 8 per circuit.

Where 300 to 750 watts per outlet is specified, not more than 4 per circuit.

Where more than 800 watts per outlet is specified, not over 2 outlets per circuit.

Foot-candle recommendations, given in detail in Table III, are based on seeing requirements, on observations of results in actual installations and, furthermore, on the adequacy of present equipment and methods to provide the desirable standard of illumination with safety and economy. Recommendations in Table III have been revised and brought up-to-date within the last week or two and embody the latest suggestions of lighting engineers. All laboratory data point to the desirability of higher levels of illumination from the standpoint of vision, and practical tests substantiate the economy which results because of increased production, fewer accidents and greater eye comfort for employes.

But without regard to such factors which are basic considerations of lighting economics, because of the progress the electric industry has made, tending to lower costs of energy and lamps, 30 foot-candles cost no more today than 3 foot-candles cost 25 years ago.

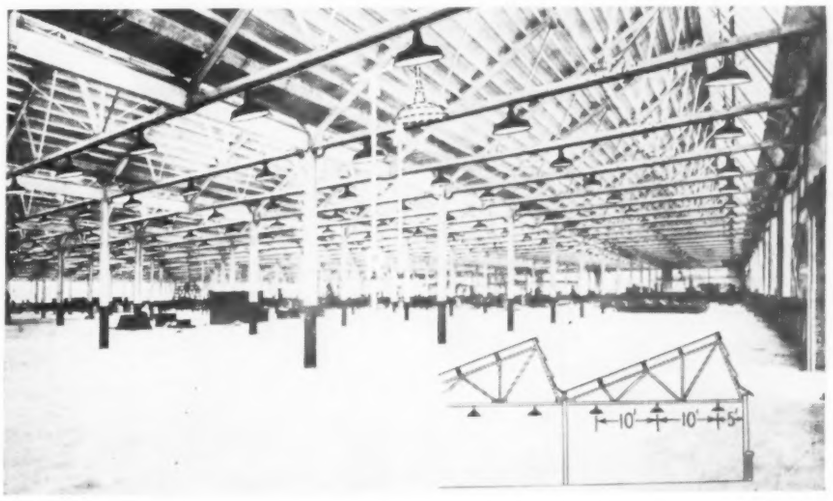
With regard to foot-candles, it may be interesting to point out that the light intensity of sunlight outdoors is about 10,000 foot-candles; outdoors in shade 1000 foot-candles; interior daylight near windows 100 foot-candles; good artificial light in a modern system 10 foot-candles; and artificial light in an old-style system as little as 1 foot-candle.

For measuring foot-candles of illumination, there are now available several types of meters, such as the "sight meter" or photronic foot-candle meter, which read directly in foot-candles. Weston Electrical Instrument Co., Newark, N. J., makes meters of this type in several styles, both self-contained and with port-

Table II

Mounting Height of Lighting Units

Direct lighting units				Semi-indirect and indirect lighting	
Actual spacing between units, feet, (D)	Distance of units from floor, not less than, feet, (H)	Desirable mounting height in industrial interiors (R)	Desirable mounting height in commercial interiors (R)	Actual spacing units, feet (D)	Recommended suspension length (top of bowl to ceiling), feet
7	8	12 feet above floor if possible — to avoid glare, and still be within reach from step-ladder for cleaning.	The actual hanging height should be governed largely by general appearance, but particularly in offices and drafting rooms, the minimum values shown in Column H should not be violated.	7	1–3
8	8½			8	1–3
9	9			9	1–3
10	10			10	1½–3
11	10½			11	2–3
12	11			12	2–3
14	12½			14	2½–4
16	14			16	3–4
18	15	Where units are to be mounted much more than 12 feet it is usually desirable to mount the units at ceiling or on roof trusses.		18	3–4
20	16			20	4–5
22	18			22	4–5
24	20			24	4–6
26	21			26	4–6
28	22			28	5–7
30	24			30	5–7



Application of data in the table above shows that for a 10-foot spcing the units might be dropped to 10 feet above the floor as shown by the dotted outline of a reflector at height H. They are, however, mounted on the trusses at 12 feet to minimize glare

Table III

Recommended Standards of Illumination for Industrial Interiors

	Foot-candles
Aisles, stairways, passageways	2
Assembling:	
Rough	10
Medium	20
Fine	B[1]
Extra fine	A[2]
Automobile manufacturing:	
Assembly line	B
Frame assembly	15
Body manufacturing:	
Assembly	20
Finishing and inspection	A
Coal breaking, washing and screening	5
Construction—indoor general	10
Elevator—freight and passenger	10
Forge shops and welding	10
Foundries:	
Charging floor, tumbling, cleaning, pouring and shaking out	5
Rough molding and coremaking	10
Fine molding and coremaking	20
Inspecting:	
Rough	10
Medium	20
Fine	B
Extra fine	A
Machine shops:	
Rough bench and machine work	10
Medium bench and machine work, ordinary automatic machines, rough grinding, medium buffing and polishing	20
Fine bench and machine work, fine automatic machines, medium grinding, fine buffing and polishing	B
Extra fine bench and machine work, grinding (fine work)	A
Offices:	
Private and general:	
Close work	10
No close work	20
Drafting room	30
Packing and boxing	10
Paint shops:	
Dipping, spraying, fiting	10
Rubbing, ordinary hand painting and finishing	20
Fine hand painting and finishing	B
Extra fine hand painting and finishing (automobile bodies etc.)	A
Plating	10
Polishing and burnishing	15
Power plants, engine rooms, boilers:	
Boilers, coal and ash handling, storage battery rooms	5
Auxiliary equipment, oil switches and transformers	10
Switchboard, engines, generators, blowers, compressors	15
Sheet metal works:	
Miscellaneous machines, ordinary bench work	15
Punches, presses, shears, stamps, welders, spinning, medium bench work	20
Tin plate inspection	30
Steel and iron mills, bar, sheet and wire products:	
Soaking pits and reheating furnaces	5
Charging and casting floors	10
Muck bar and heavy rolling, shearing, rough by gage, pickling and cleaning	10
Plate inspection, shipping	30
Automatic machines, red, light and cold rolling, wire drawing, shearing, fine by line	15
Structural steel fabrication	10
Testing:	
Rough	10
Fine	20
Extra fine, instruments, scales, etc.	A
Woodworking:	
Rough sawing and bench work	10
Sizing, planing, rough sanding, medium machine and bench work, gluing, veneering, cooperage	20
Fine bench and machine working, fine sanding and finish	30

[1]Group B, illumination level 50-100 foot-candles. In these applications the same fundamental consideration should be given as in Group A, that is, general illumination of about 20 foot-candles plus supplementary lighting.

[2]Group A, illumination level above 100 foot-candles. In these applications the combination of general lighting plus supplementary lighting usually is to be recommended. Where supplementary lighting is employed, care must be exercised to insure providing a sufficient amount of general illumination (about 20 foot-candles). The design and installation of the supplementary lighting system must be adequate to meet the seeing requirements of each individual task. Direction of light, diffusion, eye protection, study of direct and reflected glare, as well as elimination of objectionable shadows, are all vitally important.

able and separate indicating paddle for measuring light intensities in out-of-the-way places. In general, the principle of operation of these devices is the change in potential as affected by changes in light intensity upon a small sensitive metallic disk. This potential change is registered by a pointer on a dial calibrated to read in foot-candles. No electrical equipment is involved and light intensity may be measured quickly and conveniently, compared with the old-style foot-candle meter which involved a series of translucent spots on a strip of paper and a separate source of illumination. Accuracy of this type of meter was largely dependent upon the skill of the observer.

In order to specify the lamp size necessary to provide the foot-candles desired, the first step is to determine the percentage of light emitted by the lamp that actually gets down and is useful on the working plane. This percentage is called the coefficient of utilization for the particular installation. Interior finish, size and proportions of the room, the type of reflector and maintenance conditions

$$\text{(A) Area in square feet per outlet} = \frac{\text{Total floor area in square feet}}{\text{Number of outlets}}$$

$$\text{(B) Lamp lumens required per square foot} = \frac{\text{Foot-candles required}}{\text{Coefficient of utilization} \times \text{Probable average illumination in per cent of initial illumination}}$$

$$\text{(C) Lamp lumens required per outlet} = \text{Area in square feet per outlet (from A)} \times \text{Lamp lumens required per square foot (from B)}$$

are variables which must be taken into account when figuring the coefficient of utilization. Tables have been prepared in which these variables are listed and from which the coefficient may be read quickly. Space does not permit reproducing these tables here, but they are available to anyone interested.

With regard to reflector characteristics, a lighting installation may be judged by seven fundamentals, as follows:

1. Illumination on horizontal surfaces.
2. Illumination on vertical surfaces.
3. Appearance of the lighted room, referring only to the general or casual effect produced by the complete system.
4. Direct glare, the most serious cause of bad lighting.
5. Reflected glare from polished working surfaces.
6. Shadows or differences in brightness of surfaces, essential in observing objects in their three dimensions but of little value in the observation of flat surfaces.
7. Maintenance requirements.

Determining Correct Lamp Size

The last of the four factors mentioned at the start of this article—determining lamp size and lumen output required—can be arrived at by several methods. Probably the simplest is the trial and error method. With spacing and mounting height of outlets, wire size, and reflector characteristics determined, and the number of foot-candles required known, it is an easy matter to try various size lamps in outlets until the "sight meter" on the working plane records the proper foot-candle reading. If more exact determination is desired, the following formulas may be used:

Having determined the lamp lumens required per outlet by the above calculations, the wattage of lamps to be used may be found by reference to Table IV, where can be located the size of lamp of the desired type which most nearly meets the requirements of lumen output. When the lamp lumens required fall nearly midway between two sizes, it is usually found best to choose the larger size.

With this brief insight into the "how and why" of good industrial lighting from the practical standpoint, it is now the purpose of this discussion to complete the picture by looking ahead into one of the new branches of the future lighting art—

Table IV

Lumen Output of Multiple Mazda Lamps

110-115-120 volt standard lighting service clear lamps		110-115-120 volt standard lighting service mazda daylight lamps		220-230-240-250 volt service clear lamps	
Size of lamp in watts	Lumen output	Size of lamp watts	Lumen output	Size of lamp in watts	Lumen output
100	1510	100	980	100	1100
150	2400	150	1560		
200	3400	200	2210	200	2740
300	5490	300	3570	300	4320
500	9800	500	6370	500	8000
750	14,550	...	...	750	12,600
1000	20,700	...	...	1000	18,300
1500	33,000	...	...	1500	28,500

PROVEN SUCCESS
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..Satisfactory performance on lathes, millers, gear hobbers, thread millers, nut tappers, bolt cutters and many other types of machine tools. ..Equal efficiency as a cutting lubricant on low carbon, high carbon, nickel or chromium steels. ..The same dependable performance on all kinds of grinding work.

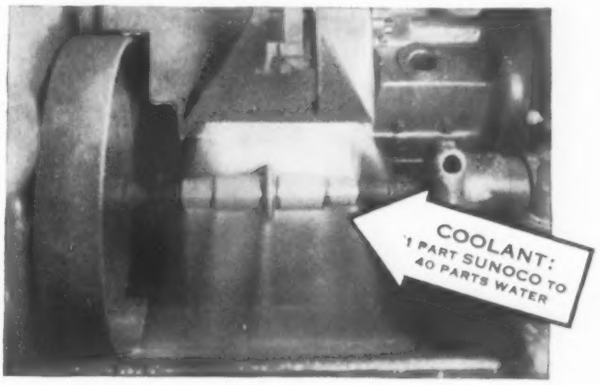
Sunoco Emulsifying Cutting Oil makes possible increased tool life, greater accuracies (even at high speed) and *fewer* rejects . . . with consequently increased production . . . and *all* are advantages readily translated into greater profits.

Freedom from glazing, increased wheel life, accurate tolerances and perfection of finish follow the use of Sunoco in the grinding operations.

Very possibly Sunoco can save money in your plant. Write today for full information.

Courtesy of **HUPP** *Motor Car Corp., Fostoria Div.*

OPERATION: MILLING CRANKSHAFT COUNTERWEIGHTS.
MACHINE: CINCINNATI HYDROMATIC MILLER.
MATERIAL: COLD DRAWN STEEL.
SPINDLE SPEED: 65 R. P. M.
FEED: 8 INCHES PER MINUTE.



Courtesy of **CLEVELAND TRACTOR** *Co., Cleveland*

OPERATION: FINISH GRINDING, LOWER TRACK WHEEL SHAFT, ALL BEARING DIAMETERS AND BOTH SHOULDERS.
MACHINE: CINCINNATI PLUNGE CUT GRINDER, DOUBLE WHEEL.
MATERIAL: S. A. E. NO. 1035; ROCKWELL C37.
STOCK REMOVED: .025 INCH; .010 ON SHOULDERS.
WHEEL: 24 INCH DIAMETER; 2½ INCH WIDE.
WHEEL SPEED: 1030 R. P. M.
SURFACE SPEED: 74 FEET PER MINUTE.

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High-bay lighting in a large machine shop, providing illumination level of 20 foot-candles at the working plane. Note that units are staggered to avoid shadows from the crane

lighting for seeing. With increasing importance being given to the manifold rights of labor in the form of pensions, unemployment insurance, organization and the like, humanitarian problems in industry are in the ascendancy. The concluding installment of this series will present some interesting facts relating to the humanitarian side of seeing and to research into the science of seeing.

(*This is the second of a series of three articles on the general subject of lighting and seeing in industry. The first was published in the Aug.* 13 *issue of* STEEL. *The third will appear in an early issue*).

More Welding on Naval Vessels

AN ARTICE in the June-July issue of the *Shipyard Bulletin*, published by the Newport News Shipbuilding & Dry Dock Co., calls attention to the increased welding applications for naval vessels in order to secure lighter hulls with greater strength, and that this development has made it necessary for the shipyard to make major additions to welding equipment and to augment its force of trained welding operators. This has been found necessary in order to carry out the extensive welding required on the airplane carriers YORKTOWN and ENTERPRISE, both of which are now under construction at the yard.

Development of the application of welding in ship construction at the Newport News yard includes increased training, extensive research, new welding procedure planning, installation of new welding machines, building large plate slabs, increased safety provisions on galvanized steel, and altered erection procedure.

Research on welding also includes new base and filler metal and thicker material, extensive investigation of stainless steel welding and fabrication for ship shape gasoline stowage tanks of large size. Monel and aluminum arc welding has been done successfully.

Issue Instruction Book

Experimental full sized sections of floors, longitudinals, and bulkheads have been made to solve the problem of shrinkage and sequence of welding. The instructions covering welding procedure operations form a large book which is issued part by part to supervisors as the work progresses.

Heavy plate joints have been developed to reduce the amount of weld filler metal deposited and to facilitate welding. High tensile alloy steel has been experimentally welded, for which a special technique was created.

Electrodes of all kinds are tested regularly in order to solve unusual problems, in addition to routine checking of commercially covered electrodes purchased for general welding of mild steel parts. This item is of particular importance as up to the time of writing a total of 710,000 pounds of electrodes have been ordered for this new construction.

Current for welding is supplied by two substations with four new and two old 1500-ampere multiple operated generators and three 10,000-volt alternating-current transformers, necessitating unusually large electrical cables at the shipways. Twenty single-operator welding machines supply current for particular purposes.

Certification of 130 welding operators and 85 track welders has recently been accepted by the superintending constructor of the navy, stationed at the yard.

Calculates Correct Oil Pressures

RECENTLY a reciprocating machine tool was loaded with a particularly heavy piece of work. The next morning it was found impossible to operate it. The oil film between the vees and the ways had not been maintained under the heavy load and as a result the vees had seized the ways. The machine had to be dismantled and the vees and ways resurfaced. In this instance the same lubricating pressure was used that usually is employed in light work, and this pressure was insufficient for the increase in weight.

A Cleveland interest which has made a special study of oil pressures necessary to displace the load in machine tools has developed a formula which automatically guards against seizing of the character described and which also prevents inaccuracies in machining due to excessive oil pressures which unduly elevate the vees out of the ways. The formula is simple, specifying only that the total lubricating oil pressure and the total weight of the workpiece and the work table must equal each other. This interest calculates the total oil pressure in pounds per square inch, for the total number of square inches contacted by the vees and the ways. As a result, it changes its lubricating oil pressure, by means of control valves, in accordance with the weight of the work.

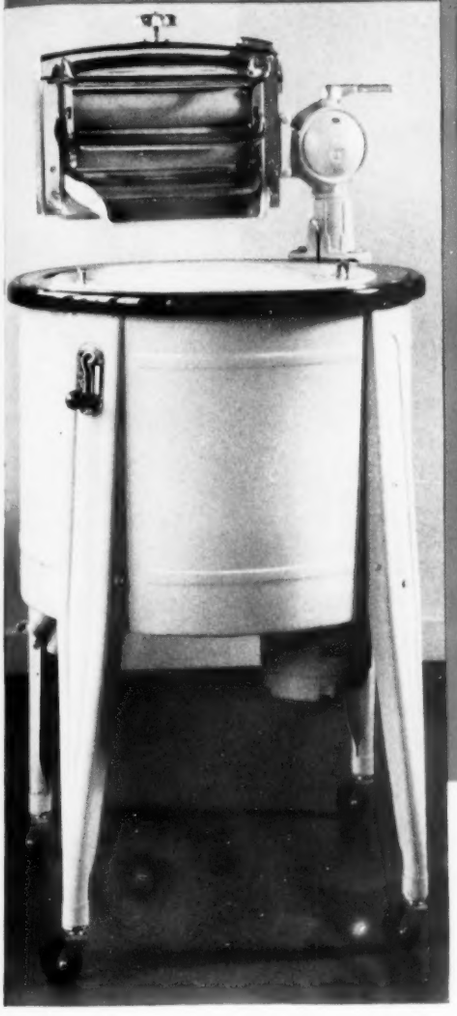
In its experiments, this company ascertained much interesting performance data with lubricating oil pressures. For instance, it was found impossible to make a satisfactory finishing cut with oil pressure of 30 pounds per square inch, whereas an acceptably smooth finish was obtained with pressure of 2 pounds.

Among machinery companies which are now making a study of the relation between lubricating oil pressures between vees and ways and accuracy of work, are several manufacturers of precision grinding machinery.

Hardfacing on Dredges

Hardfacing is being used on some of the large gold dredges in California for rebuilding chrome-nickel steel bucket pins and upper tumbler plates. The latter first are built up with low-carbon steel rod to within ¼ to ⅜-inch of finished size and then finished with a layer of tough wear-resisting material. The hardfaced plates are rebuilt every four months, the application of the hard material increasing the life of the plates about three times.

The Perfection of Finish You Desire . . . Inland Cold Rolled Sheets



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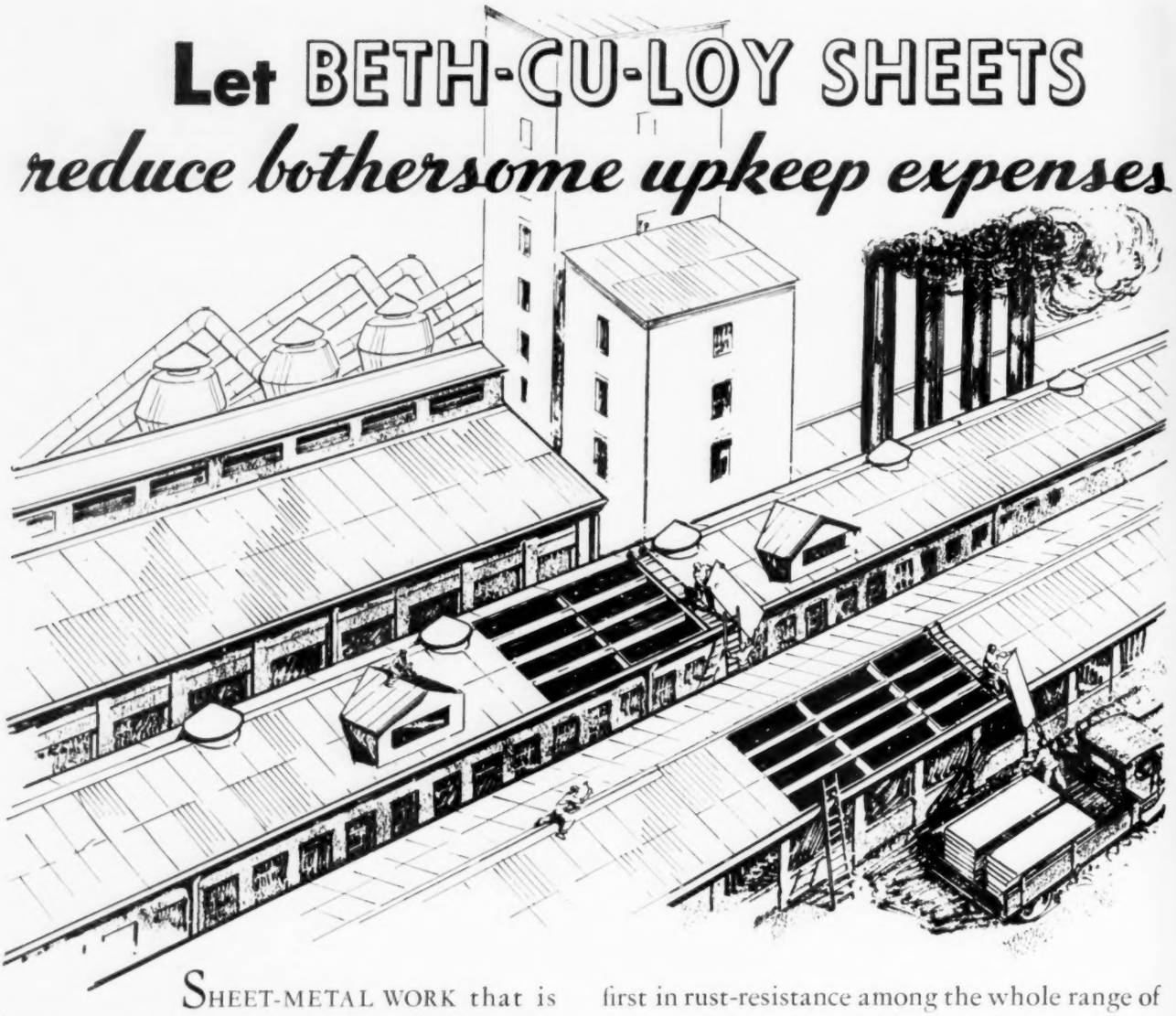
Let BETH-CU-LOY SHEETS *reduce bothersome upkeep expenses*



SHEET-METAL WORK that is forever rusting out is a constant bother, and one of the commonest sources of unnecessary upkeep expense. Rust-resisting Beth-Cu-Loy Sheets for ducts, chutes, sidings, roofs and other industrial applications cost but little more than sheets of ordinary steel. Yet in rust-exposed applications the copper-bearing steel of which Beth-Cu-Loy Sheets are made has a life of from two to two-and-one-half times that of ordinary steel.

This superior resistance to rust of copper-bearing steel is no mere matter of opinion. It has been definitely established as a result of a series of atmospheric-exposure tests carried out by the American Society for Testing Materials. These tests showed that copper-bearing steel is first in rust-resistance among the whole range of commercial steels and irons. And, at the same time, it was one of the cheapest materials included in the tests.

Beth-Cu-Loy Sheets used around the plant result in fewer replacement jobs and lower maintenance costs. Manufacturers of products made of sheet metal find a potent sales appeal in Beth-Cu-Loy rust-resistance, without the handicap of high material costs.

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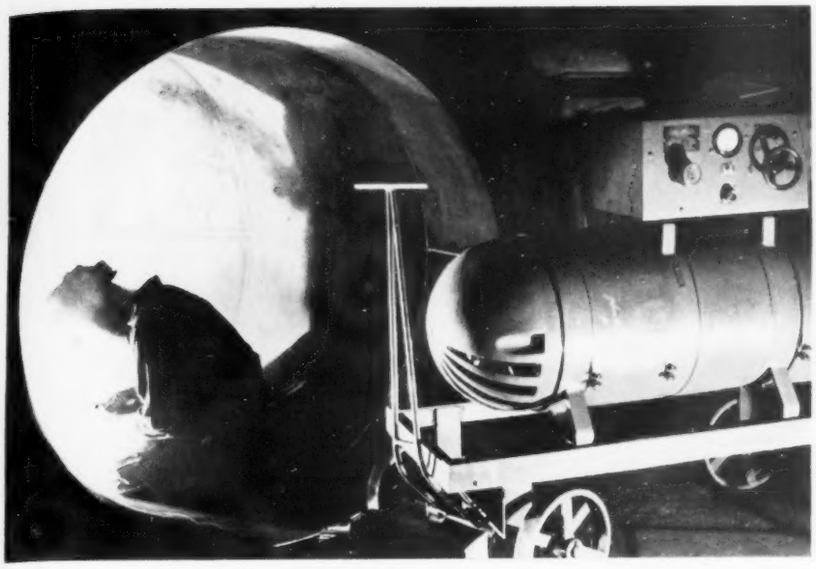


This arc welder and the welding machine behind him are forming 315,000 pounds of stainless-clad steel into an 1800-foot pipe for the new Milwaukee sewage disposal plant. Pipe diameter varies from 2 to 5 feet

Sewage Disposal Plant Uses Much Stainless-Clad Pipe

WHAT is understood to be the the largest order for two-ply stainless - clad steel ever placed is being fabricated by arc welding into an 1800-foot pipe in Milwaukee. This unusual pipe, 2 to 5 feet in diameter, and ¼-inch thick, will carry compressed air from rotary turbo-blowers to aeration tanks at the Milwaukee sewage disposal plant on Jones island. It is being built by the Cream City Boiler Co., Milwaukee, fabricator of alloy metal equipment, which will also do the field welding. This is the first time that stainless-clad steel has been used for this type of work.

Low Internal Friction

The pipe, some of which is shown in the accompanying illustrations, is a main air header which will convey air under pressure for activating raw sewage. Welded stainless steel construction was decided upon because of the low internal coefficient of friction which it provides and which will be maintained for life. Because of this low internal friction, the pipe was designed several inches smaller than cast-iron pipe for the same purpose. With this decrease in diameter, it is possible to install the pipe in existing structures. Cast iron pipe would have required expensive changes to the buildings. Arc welding also proved the most economical and most rapid fabricating method.

Most sections of the pipe are 54 feet long. These are made up of nine plates ¼-inch thick. Each single plate is formed and placed in a special welding clamp for making the longitudinal seam. This is a plain butt weld, made with 18-8 stainless steel electrodes on the inside and with heavily-coated mild steel electrodes on the outside. Welding speed is about 50 feet per hour.

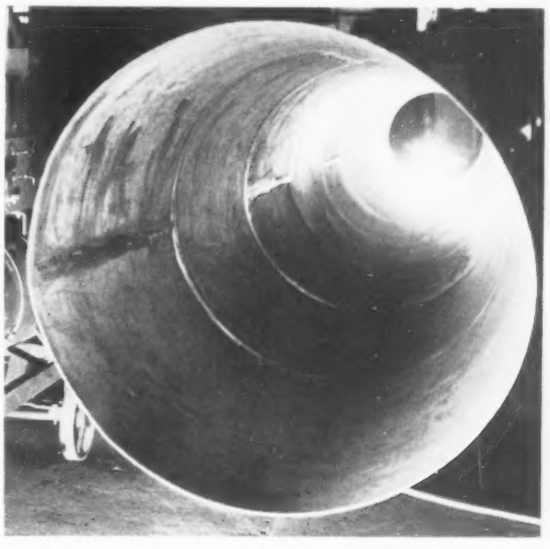
Nine of these plate shells then are welded together to form one section. The circumferential joints are butt welds. The plates have previously been sheared square and are placed with a 3/32-inch gap between the edges.

About 1325 feet of the pipe is 5 feet in diameter; the rest is 48, 36, 30 and 24-inch. The contract required the fabrication of several special elbows, T's and fittings. Expansion joints are made of 10-gage solid stainless steel. All flanged connections are so made that only stainless steel is exposed to the action of the material which is to be carried by the line.

Welding equipment and electrodes were supplied by the Lincoln Electric Co., Cleveland. All welding of the stainless inside of the pipe is being done with ⅛ to ¼-inch stainless steel electrodes; welding of the plain carbon steel side of the pipe is done with 5/32 and 3/16-inch electrodes suitable for this type of work. Shielded arc type welders of 400-ampere capacity supply the current.

Approximately 315,000 pounds of ¼-inch two-ply stainless steel and 9000 pounds of 10-gage solid stainless steel are required for the project. Total cost of the job, which is scheduled for completion by the first of December, is approximately $107,000.

THE stainless steel interior of this pipe must be perfectly smooth to reduce friction. The arc welded beads are flat and smooth, and stronger than the pipe itself



Time Ripe for Maintenance Men To Check Equipment

Current slackness in industrial production offers a good opportunity for the electrical maintenance engineer to check over new equipment and overhaul machines and parts preparatory to an increase in production in the fall, in the opinion of A. E. Buelow, chief engineer, the Lamson & Sessions Co., Cleveland, writing in the August issue of *Electrical Production*. Power lines, switchboards, motors, electric furnace equipment and lighting facilities are a few of the items which should be examined thoroughly for operating defects.

Fabricator Builds Business By Adding Job Welding

Due to scarcity of construction work during the depression, a middle western structural steel fabricating interest several years ago embarked into the job welding business. This fabricator makes a specialty of welded housings, bases and frames for various machinery manufacturers. Backed by aggressive sales promotion work, this company has increased its business constantly. It started with a single electric arc welding unit of the portable type; later it added two more, and during the past year has increased this total to five, with the prospect that additional units of this type will be added shortly. The management believes that but for this change in its business, the company would have passed out of the picture long ago.

\$ \$ \$

Stainless Steel Extends Life Of Soap Boiling Vats

An interesting new application of stainless steel has been effected recently by soap manufacturers. Heavy oxides are developed when boiling soap, and these oxides attack ordinary tank steel vats in the zone adjoining the top of the boiling liquid. Some of the manufacturers are equipping their boiling vats with a thin strip of stainless steel which is wide enough to cover the oxide zone. This stainless steel is welded on the inside surface of the vats. The operation is relatively inexpensive, and makes a profit by greatly increasing the life of the vats. Incidentally, it is claimed that the new thin stainless strip, rolled in gages ranging from 0.002 to 0.005-inch, is ideal for such use.

\$ \$ \$

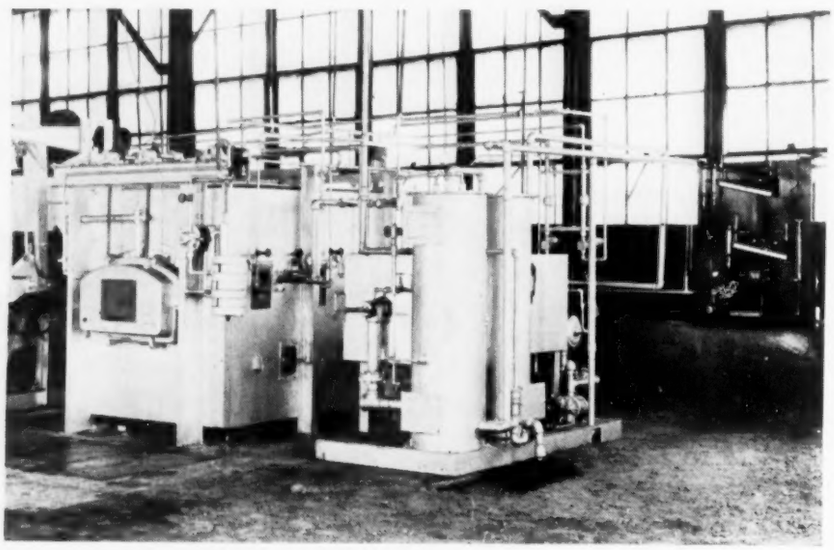
More Attention Now Given To Machine Finishes

A machinery buyer in Cleveland reports a growing tendency on the part of certain machinery manufacturers to improve the finish and appearance of their products. Surfaces are smoother, and there is more effective use of paint and chromium plating. This buyer reports a preference on his part for the machinery with superior finish and appearance. In the first place, it is likely that the fine apperaance of the outside reflects equal care in the design and construction of the machine. In the second place, it is more than likely that the men who operate a machine of pleasing appearance will give it more careful treatment than otherwise.

\$ \$ \$

Special Equipment Surface Hardens Steel by Flame

An apparatus developed by one of the subsidiary companies of the German chemical trust permits the operation of surface hardening of steel to be carried out by heating and quenching in one operation. An oxyacetylene burner of special construction is made to travel over the surface of the steel at a uniform speed depending upon the intended depth of treatment. A quenching attachment follows the flame and cools off the heated metal with an appropriate quenching medium. The



BEARING RACES CARBURIZED IN CONTROLLED ATMOSPHERE FURNACE: This gas preparation unit and batch gas carburizing furnace have been added to the equipment in a roller bearing plant for carburizing bearing races. Both the furnace and gas unit were designed, built and installed by the Surface Combustion Corp., Toledo, O. The gas preparation unit has a capacity of 800 cubic feet of gas per hour

take advantage of Modern Metals

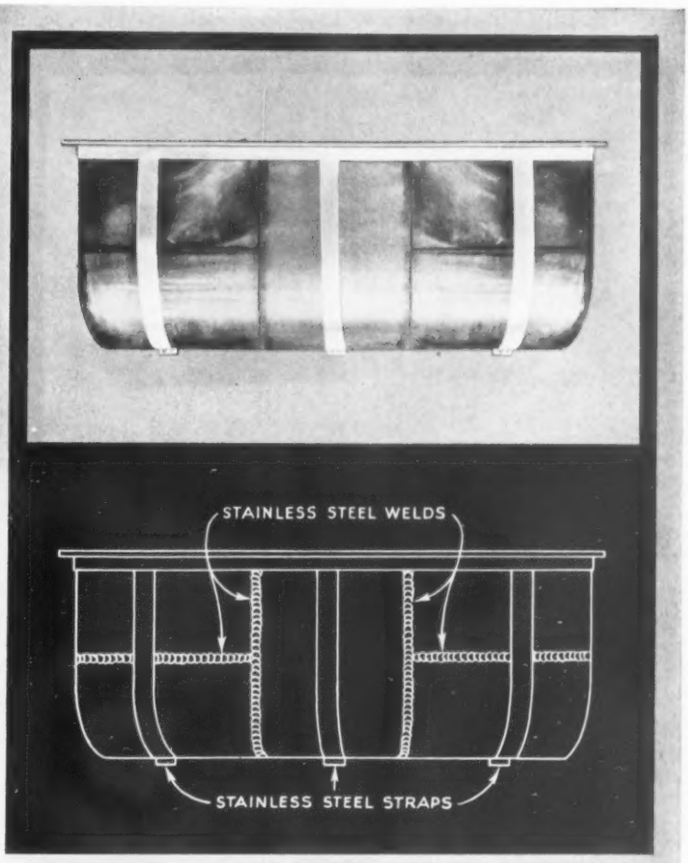
Design for OXWELDING

IN THE fabrication of stainless steel and other corrosion-resistant metals and alloys, oxwelding assures a smooth, corrosion-resistant joint.

The manufacturer of this milk storage tank called on Linde Process Service to help in developing a type of oxwelded joint which would assure a smooth interior wall and avoid warping of the light stainless steel sheet. On Linde's recommendation all seam edges were flanged 3/16 in. Each edge was thus at right angles to the main part of the sheet for the full length of each section. The flanged edges were then placed together and welding started at one end, melting down the flanges to form the weld without the use of welding rod. This procedure completely eliminated any trouble in warping and also gave a joint that was perfectly flush on the inside of the seam. Orders for the construction of additional tanks along identical specifications throughout confirmed the customer's approval of the job.

Perhaps your metal product would be better with oxwelded joints. Linde Process Service can answer this question for you.

A letter or telephone call to the nearest Linde Sales Office will bring you information on this service. There is no obligation—and you will benefit from the many years of experience in the development of the oxy-acetylene process which the Linde organization commands.



In redesigning this 700 gal. tank for milk storage, it was necessary to eliminate an unsanitary and corrosion-ridden condition. With the help of Linde Process Service the tanks were redesigned to be made from stainless steel with oxwelded joints. The inside and outside are permanently free from undesirable laps where germs might lodge or corrosion might start.

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apparatus is moved mechanically, its speed being regulated by a suitable arrangement. The process lends itself best to treatment of steels with carbon contents between 0.4 and 0.8 per cent. It is intended as a substitute for case hardening by cementation or nitration.

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Low-Carbon Stainless Has Steady Impact Value

Consumers who want to employ stainless steel for low temperature work will do well to specify low carbon content. This is the conclusion from a series of tests just completed. These tests involved 18-8 chrome-nickel steel. They showed that this metal, with a carbon content of 0.08 per cent, has the same impact value at –183 degrees Cent. as it has at room temperature. The tests also showed that as the carbon increases, the impact value at such low temperatures falls off. These results are of particular significance to the dry ice and refrigerating equipment industry.

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Aluminum Welding Rod Improved by Silicon

Cast aluminum may be arc welded with a rod containing 95 per cent aluminum and 5 per cent silicon. Silicon lowers the congealing point of the molten metal, permitting the parent metal to dissipate more residual heat and to contract through a considerable section before the weld metal cools below the plastic stage. Silicon also increases the hardness and tensile strength of the weld metal and also gives a finer grain structure. Machine coated rods are recommended.

\$ \$ \$

Fundamentals Important in Designing for Hardfacing

In designing machine parts for hard facing, consideration should be given to certain fundamentals. The overlay or inlay must be welded on and the method of welding to be employed should be selected carefully. Any modern welding method involves the application of heat—in most cases localized. This tends to cause warping or distortion which sometimes must be guarded against by preheating or jigging the part before hard facing. In any event, machine parts should be rough machined only before the overlay is applied. After hard facing, finish machining will take care of any movement caused by the welding operation. Parts requiring subsequent heat treatment should be rough machined first, next hard faced, then heat treated—oil quenched only—and drawn when required, and finally ground to finished size.

\$ \$ \$

Effect of Chromium in Iron

In adding chromium to iron to obtain a particular result, it is necessary that the amount of chromium must be strictly proportional to the characteristics of the base metal. For example, to obtain a machinable iron, 1 per cent chromium might be satisfactory if the base metal is high in carbon and silicon. However, if 1 per cent chromium should be added to a low-carbon, low-silicon iron, the resulting casting probably would be white and hard.

\$ \$ \$

Air Harmful in Welding

In the welding of nickel-chrome alloys, it is essential that no air come in contact with the molten puddle or pool or the result will be a porous, blistered weld with extremely low tensile strength. Often it is possible to exclude air by manipulating the torch in such a fashion that the flame completely shields the pool. Occasionally, however, the pool is too large for this technique and some other envelope must be developed. Flux applied in the customary manner usually will provide satisfactory protection.

\$ \$ \$

Data on Railroad Castings

Nickel and chromium are written into all cast iron specifications for Class I-A castings by a western railroad. These castings must possess the following essential properties: Transverse strength, 3800 pounds; deflection, 0.110-inch; and brinell hardness ranging between 196 and 235.

\$ \$ \$

Europe Using Magnesium

Magnesium metal, which is approximately one-third lighter than aluminum, is winning wide acceptance for commercial applications in Europe. A fast streamlined train, the Hamburger, is made of this metal. The wheels of many London buses are made of magnesium. This metal also is being used in Europe in airplanes.

Welding Automatically With New Alternating-Current Machine

ALTERNATING-CURRENT arc welding, using shielded arc or covered electrodes, is attracting favorable attention as a means for fabriacting heavy work including pressure vessel, pipe line, penstock, structural frame and base plate construction. Furthermore, the method is said to be particularly adaptable to automatic welding.

An automatic welding machine, utilizing the advantages of the alternating-current arc and covered electrodes, recently has been developed by the Electric Arc Cutting & Welding Co., Newark, N. J. This equipment, operates without relays, magnetic switches or other moving parts.

In making welds, the electrode advances downward, strikes the arc, recedes to a determined distance and holds this arc length, raising and lowering with the inequalities of the work, at the same time weaving from side to side in accordance with the best practice for depositing covered electrodes. This action is effected by means of a simple two-winding motor with one field. The two fields are connected to a separate source of direct-current power and the other to a rectified direct current across the alternating-current arc.

The operation is simple; on open circuit, that is, before the arc is struck, the arc voltage is at a maximum—around 70 volts. The electrode travels down rapidly due to the armature current in the motor in the downward direction being maximum. When the electrode touches the work, this voltage becomes zero and the other electrode backs the work up just as rapidly until the two balance, at say 40 volts. The feed downward is just enough to compensate for the consumption of the rod.

Electrodes to be used can be either of the barbed or knurled type, with continuous, intermittent or twisted provocations for carying the current, or of the usual type with one side bared for contact. The latter, however, will cause the arc to drop under certain conditions.

Electrodes with conducting coatings also may be obtained, that is, with coatings containing metallic constituents. Some of these are used to alloy the weld deposit so as to obtain higher physical strengths. On automatic work, especially, it is said that superior results can be obtained without using the very heaviest coating generally thought to be necessary in manual welding. In other words, with automatic close control of the

molehills on music wire make mountains on your finished spring

Music Wire must be round and free from high spots. That's why every coil is tested so carefully for these little molehills that make mountains in a finished spring. Even so small a spot as .0001 on .012 music wire can make a 3/4" finished spring 1/32" longer or shorter.

Washburn workmen perform many scientific and common sense tests to assure as high a perfection as possible in uniformity of size, of quality, and of given tensile strength.

Specify Washburn "Eagle" Brand Music Wire for all your spring requirements and other needs where a high quality music wire must perform an important duty. Write for information and folder of sizes and prices.

WASHBURN WIRE CO., PHILLIPSDALE, R. I. • WASHBURN WIRE CO., INC., NEW YORK

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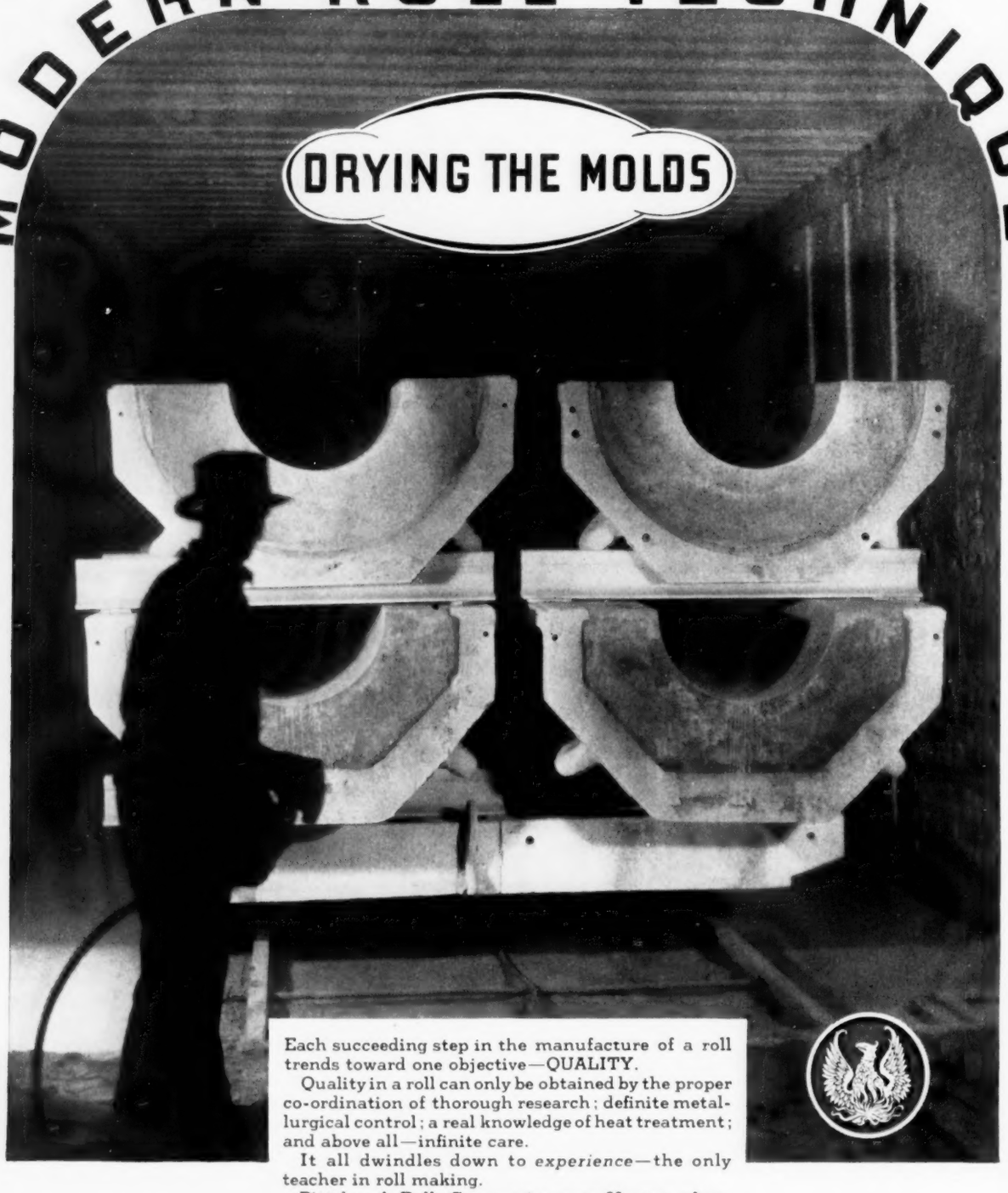
CLEAN UNIFORM BILLETS - STRIP - RECTANGULAR, ROUND, FLAT RODS
TEMPERED AND UNTEMPERED FLAT AND ROUND HIGH CARBON WIRES

MODERN ROLL TECHNIQUE

DRYING THE MOLDS

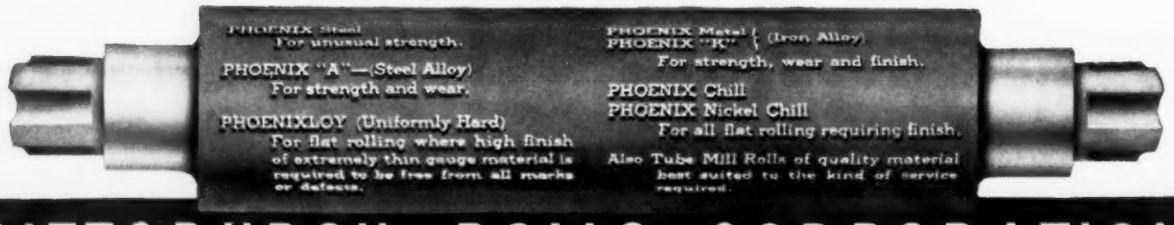


Each succeeding step in the manufacture of a roll trends toward one objective—QUALITY.

Quality in a roll can only be obtained by the proper co-ordination of thorough research; definite metallurgical control; a real knowledge of heat treatment; and above all—infinite care.

It all dwindles down to *experience*—the only teacher in roll making.

Pittsburgh Rolls Corporation puts 60 years of experience into every roll it manufactures.



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For unusual strength.

PHOENIX "A"—(Steel Alloy)
For strength and wear.

PHOENIXLOY (Uniformly Hard)
For flat rolling where high finish of extremely thin gauge material is required to be free from all marks or defects.

PHOENIX Metal } (Iron Alloy)
PHOENIX "K" }
For strength, wear and finish.

PHOENIX Chill
PHOENIX Nickel Chill
For all flat rolling requiring finish.

Also Tube Mill Rolls of quality material best suited to the kind of service required.

PITTSBURGH ROLLS CORPORATION
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alternating-current arc, in which the metal is shot across the arc as a very finely divided vapor, the amount of coating is claimed to be not so necessary. Chemical fluxes which give off gas to protect the arc are found to be as useful as the heavy protecting slag coating. Advantages of the thinner chemical coatings are the reduction in amount of slag and less danger of inclusions.

It is claimed that as a result of these various factors the alternating-current arc for heavy pressure vessel welding gives results not attainable with direct-current.

Design of Large Bending Roll Yoke Predetermined Photoelastically

ENGINEERS of Baldwin-Southwark Corp., Philadelphia, manufacturer of heavy machinery of hydraulic and special types, were faced not long ago with a problem in the design of a yoke for use in connection with a large and heavy bending roll. This casting was to be made of high tensile electric furnace steel and was to weigh about 11,000 pounds. It was to be called on to resist safely direct loads up to 1,650,000 pounds normally and to probably more than twice this value occasionally while being subjected at times to a side load of much smaller magnitude producing a transverse bending in a vertical plane.

The shape of this part together with the manner of loading made analytical investigation difficult if not impossible. It was decided, therefore, to make a scale model in steel plate, load it in a testing machine and measure strains with Huggenberger tensometers. This was done, the set-up being shown in Fig. 1. The method was not entirely satisfactory, however, as some of the results did not seem consistent with others. It was suspected that the stress changes were rapid and the fact that the tensometers had a minimum gage length of 1 inch made it impossible to detect sharp stress gradients suspected to exist.

It was then decided to pursue the matter further and investigate the stress distribution by photoelastic study of a celluloid model. Since no photoelastic outfit was available conveniently, it was necessary to build an outfit for the investigation. Since the primary desideratum was the detection of dangerous stress concentration, if any, and not a quantitative analysis, the problem was rendered relatively simple.

View of the stressed model, in panchromatic polarized light, is shown in Fig. 2, and as may be seen readily no dangerous stress concentration is present and the part was constructed with a reasonable assurance that, given a normal casting, no field failure was probable.

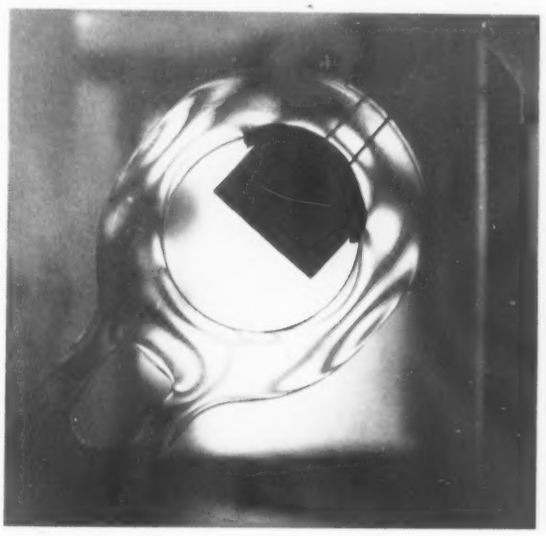


FIG. 2—Photoelastic methods then were used to ascertain the stress distribution. This view of a stressed celluloid model in panchromatic polarized light shows no dangerous stress concentration, indicating satisfactory design

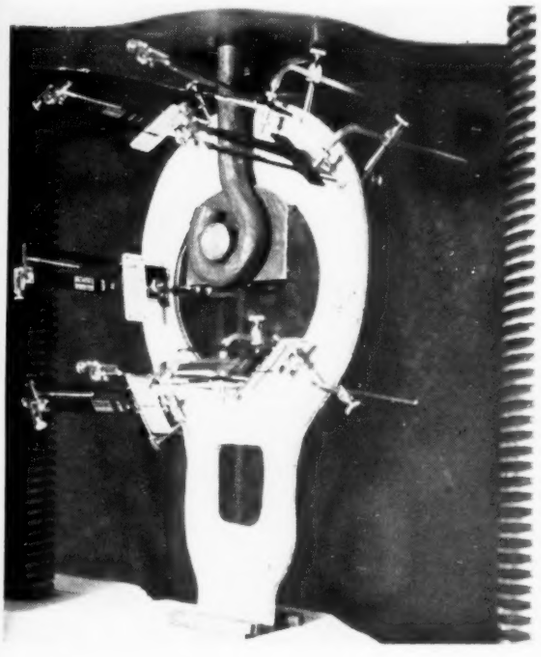


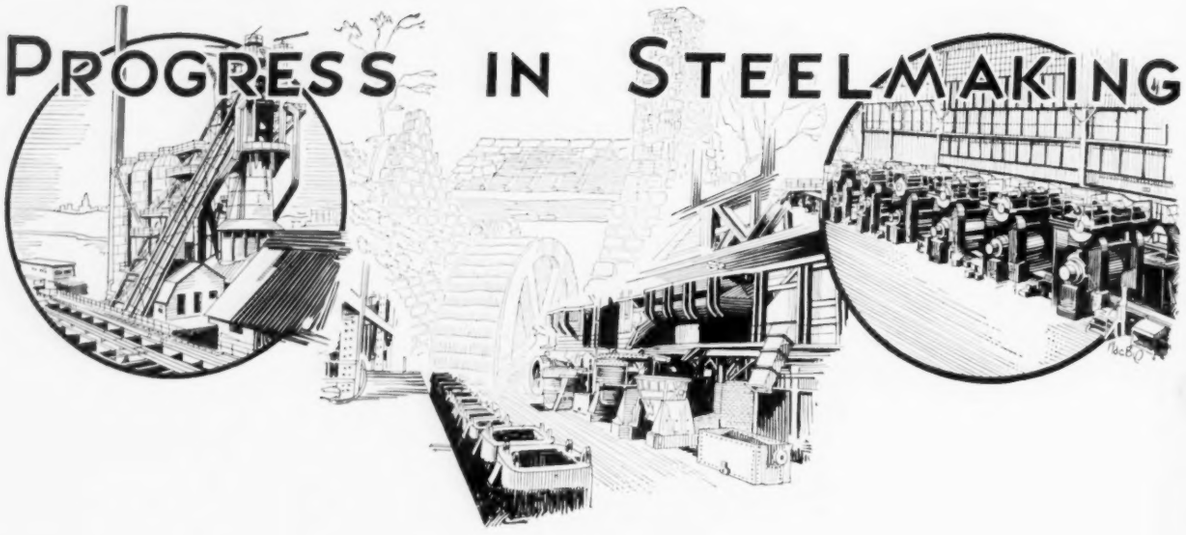
FIG. 1—Before casting an 11,000-pound roll yoke, a steel plate scale model was investigated with tensometers to ascertain strains and stresses, and to predetermine whether the casting would meet requirements

Reviews Practical Aspects Of Grain Size in Steel

Because of conspicuous differences in the character of coarse and fine grained steels, the matter of grain size in recent months has received considerable attention. Grain size influences the behavior of steel in forging, annealing, machining and hardening as well as the mechanical properties at normal and elevated temperatures. Both types of steel have definite fields of usefulness, depending upon the physical requirements that are to be emphasized.

Writing in the August issue of *Metal Progress*, R. L. Wilson, metallurgical engineer, Timken Steel & Tube Co., Canton, O., discusses some of the practical aspects of the matter of grain size. Transformation and hardening phenomena, fine grained carburizing steels, direct hardening steels, annealing and machining, and high temperature properties are discussed from the metallurgical standpoint; in conclusion the author summarizes a number of interesting individual applications of steels in which the proper choice of grain size has led to economy in manufacturing or has contributed to better performance.

PROGRESS IN STEELMAKING



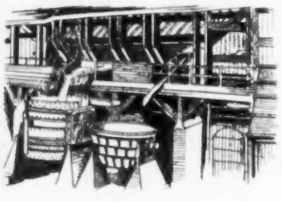
DRAINING lapweld pipe as it is removed from the pickling and wash tanks is accomplished at an Ohio mill in a novel manner. The overhead crane formerly was equipped with the usual two hoists operated from a single drum with one motor and one control. The drums were cut in half and each half was provided with its own hoist motor and control. The control levers are mounted adjacent to one another, the hoist being operated singly or jointly. Either end of the batch of pipe, therefore, can be raised higher than the other end to facilitate draining the excess back into the tank.

♦ ♦ ♦

Improved design is embodied in a recently marketed machine for stretcher leveling steel sheets. The oil-hydraulic pump is direct motor driven. The head is totally enclosed with the gears operating in oil and can be adjusted for long and short sheets.

♦ ♦ ♦

Wooden forms used for laying arch brick over the charging doors of open-hearth furnaces frequently burst into flames before the mason



completes the work. To overcome this difficulty, an open-hearth operator in the Chicago district builds his arch forms of steel, thus permitting them to be used over and over again.

♦ ♦ ♦

When the manganese content of iron approaches 2 per cent, the wear on the hearth blocks of blast furnaces is highly accelerated, according to English practice.

♦ ♦ ♦

Experimental work to find a liquid that would remove rust from steel sufficiently to leave the surface in a satisfactory condition for painting has yielded some highly satisfactory solutions. One of the preferred mixtures contains 45 grams of ferric sulphate, 25 grams of zinc chloride and 200 cubic centimeters of phosphoric acid in a quart. Other mixtures, having about the same effectiveness, omitted the zinc chloride and contained a slightly larger quantity of the two chemicals. The solutions were applied with a brush, left standing five to eight minutes during which the heavy rusted areas were abraded with steel wool, normally rusted spots being left undisturbed, and the solution and loosened rust then wiped off with a cloth.

♦ ♦ ♦

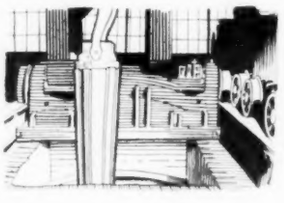
Pressure developed during the rolling of various steel products now can be ascertained by an elastic plate power gage developed abroad and equipped with pressure indicating and recording devices. The pressure indicating devices are arranged between the upper roll and a counter bearing and consist of a closed air-tight box filled with mercury. Gage plates are subjected to deformation as a result of the load exerted on them, and the mercury forced out of the pressure chamber ascends contact column. The underlying p ciple is to measure the modificatio in the volume of the hollow space enclosed by the pressure and gage plates. As the volume is larger in relation to that of the mercury column, a slight bending of the gage plates will cause the mercury to rise sharply inside the contact column and provide a reliable indication of various degrees of load by lighting lamps in the indicating device. The lamp fields indicate the load expressed in tons.

♦ ♦ ♦

Fresh impetus has been given to the industrial use of columbium. Numerous heat treatments and tests indicate that the addition of columbium in moderate and economical proportions prevents intergranular deterioration of austenitic chrome-nickel steels when exposed concurrently to elevated temperatures and chemical corrosion. This increase in corrosion resistance does not require sacrifice of present valuable properties of these steels.

♦ ♦ ♦

By proper control of the atmosphere in soaking pits of the regenerative type the scale loss is held to less than ½-per cent of the weight



of the ingot. With recuperative pits the scale losses average over 1½ per cent of the ingot weight.

SILICON-VANADIUM-

A Tough Steel That Can Take It !

From a height of 35 feet, a 2240 pound weight was dropped on the side of a Silicon-Vanadium helical spring 10⅛" in height, 8 inches O.D., made from a $1\frac{3}{16}$" bar with a tensile strength of 215,000 lbs.

How well the tough Silicon-Vanadium Spring withstood the terrific impact is shown by the unretouched photograph.

Years of tough service have proved that Silicon-Vanadium Steel, with its combination of high elastic limit and great toughness, is the ideal steel for coil springs.

Metallurgists of the Vanadium Corporation of America have a great deal of interesting data on the performance of Silicon-Vanadium Steel in coil springs. Their assistance is yours for the asking—they may be able to help you reduce spring costs.

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FERRO-ALLOYS
of vanadium, silicon, chromium, titanium, and silico-manganese, produced by the Vanadium Corporation of America, are used by steel makers in the production of high-quality steels.

VANADIUM STEELS

for strength, toughness and durability

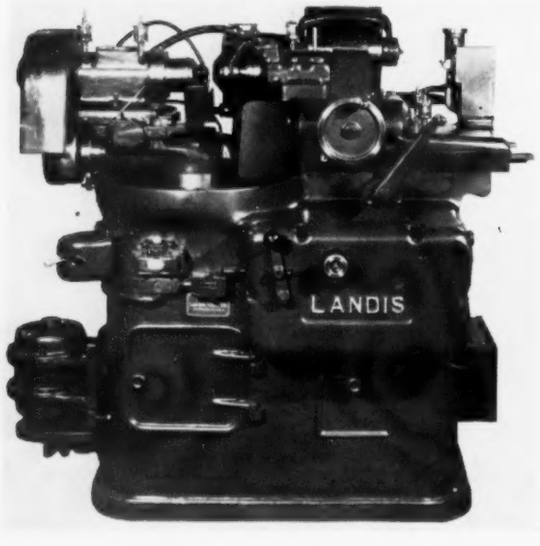
NEW EQUIPMENT

PRODUCTION FABRICATION
TREATMENT FINISHING

External Race Grinder—Landis Tool Co., Waynesboro, Pa., is placing on the market a new 5-inch hydraulic external race grinder. This unit, shown herewith, is a companion machine to the 3½-inch internal race grinder described in the March 12 issue of STEEL. Like the latter it has the capacity to grind all the smaller sizes up to and including the 218, 316 and 414 groups. Although ordinarily used for single row races only, it may be readily utilized for double row races and thrust races. Larger sizes may be handled by removing the sizing device and certain other parts and operating it as a hand machine.

During grinding various machine movements take place automatically. These movements are controlled from the progress of the grinding by a sizing device. First, the operator places a ring on the chuck and starts work rotation. Immediately the work head starts oscillating and the wheel automatically rapid feeds into grinding contact with the race. Hydraulic feed mechanism then comes into play and feeds the wheel at a predetermined roughing rate. When the work is rough ground to within about a thousandth of finish size (which amount is adjustable) the feed is automatically cut down to a very fine finishing rate. If desired, the coolant is cut off automatically at this point by a dry finishing operation. As soon as the race reaches finish size the wheel backs away automatically and work head oscillation stops. The operator stops work rotation, swings the sizing device back to its inoperative position and reloads.

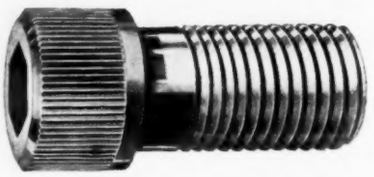
The hydraulic external race grinder is designed and proportioned with few exceptions, like the 3½-inch hydraulic internal race grinder. It will grind with as rapid a cut as the grinding wheel employed will permit and then finish smoothly under a light feed, giving a quiet and chatter-free race. The outstanding feature is the sizing device. It causes the machine to consistently produce raceways within limits of less than 0.0005-inch. Operation of the sizing device is based on the same principle on both machines. However, on the 5-inch external machine a caliper frame mounted on a swinging arm is used instead of the diamond tipped finger arrangement. An air pump, driven by the main drive motor, is supplied to furnish air pressure for the device. No one type of work holding chuck is considered standard on the external race grinder.



CHATTER-FREE finish is produced on this Landis external race grinder by the use of hydraulic power and elimination of vibration between the grinding wheel and the work. Both electric motors are mounted low on the bed. The rear drive motor is coupled directly to the oil and coolant pump and is belted up to the wheel drive jackshaft. This jackshaft and all idlers are mounted on the bed in order that vibration will not be transmitted to the wheel base

♦ ♦ ♦

Knurled Socket Head Cap Screw—Standard Pressed Steel Co., Jenkintown, Pa., recently brought out a socket head cap screw featuring a knurled head. This new screw, shown herewith, is known as the knurled "Unbrako," the object of the knurling being to assist in driving the screw by hand up to the point of final tightening.

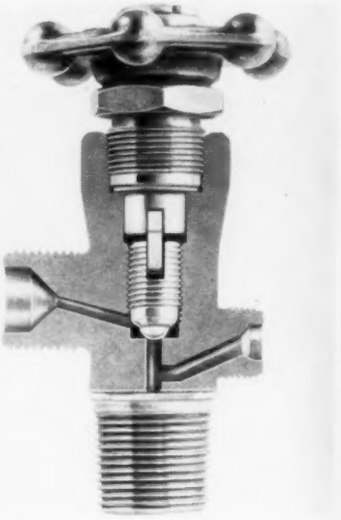


Knurled head features this "Unbrako" socket head cap screw

In driving screws, a mechanic will, whenever possible, screw in the screw partly with his fingers in order to save time. Hence a screw with a knurled head makes it possible to obtain a firm grip. Tests are said to show that this new socket head cap screw has a torque five times that of smooth-head screws.

♦ ♦ ♦

Ball-Seat Valves—Air Reduction Sales Co., Lincoln building, New York, recently announced that it has equipped more than 96 per cent of its oxygen cylinders with valves having a stainless steel ball seat. While the valve proper closely resembles the older type valve in appearance, it differs in construction in that a hardened stainless steel ball forms the seat.



Valve used by Air Reduction Sales Co. has stainless steel ball seat

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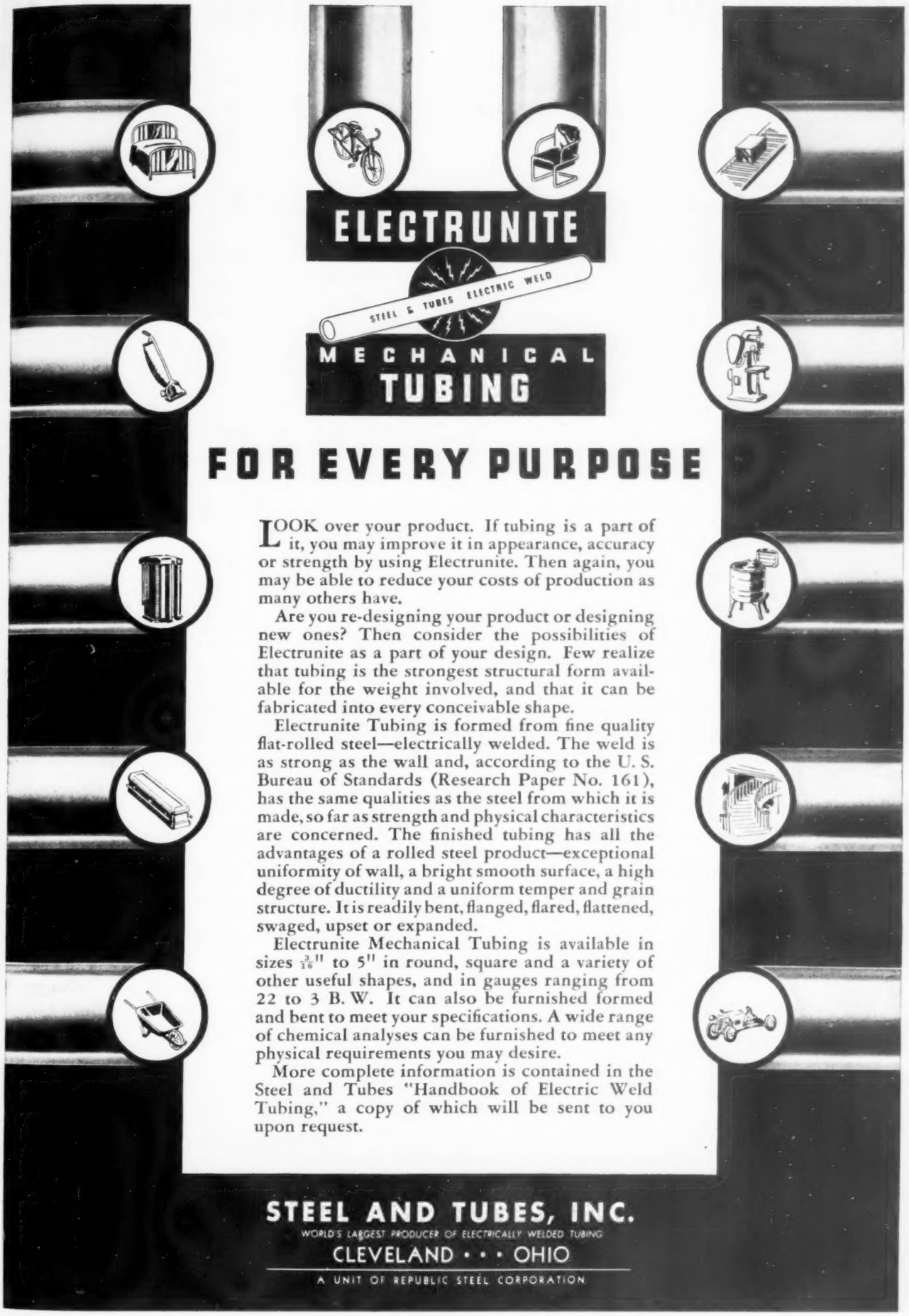
Bench Lathe—Pratt & Whitney Co., Hartford, Conn., is calling atten-



FOR EVERY PURPOSE

LOOK over your product. If tubing is a part of it, you may improve it in appearance, accuracy or strength by using Electrunite. Then again, you may be able to reduce your costs of production as many others have.

Are you re-designing your product or designing new ones? Then consider the possibilities of Electrunite as a part of your design. Few realize that tubing is the strongest structural form available for the weight involved, and that it can be fabricated into every conceivable shape.

Electrunite Tubing is formed from fine quality flat-rolled steel—electrically welded. The weld is as strong as the wall and, according to the U. S. Bureau of Standards (Research Paper No. 161), has the same qualities as the steel from which it is made, so far as strength and physical characteristics are concerned. The finished tubing has all the advantages of a rolled steel product—exceptional uniformity of wall, a bright smooth surface, a high degree of ductility and a uniform temper and grain structure. It is readily bent, flanged, flared, flattened, swaged, upset or expanded.

Electrunite Mechanical Tubing is available in sizes $\frac{3}{16}$" to 5" in round, square and a variety of other useful shapes, and in gauges ranging from 22 to 3 B. W. It can also be furnished formed and bent to meet your specifications. A wide range of chemical analyses can be furnished to meet any physical requirements you may desire.

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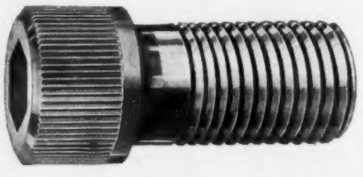

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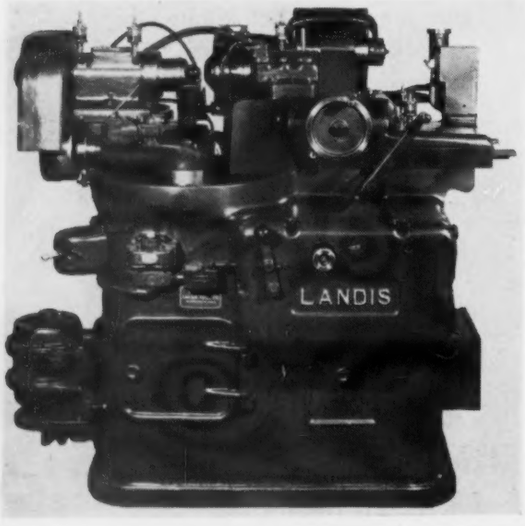

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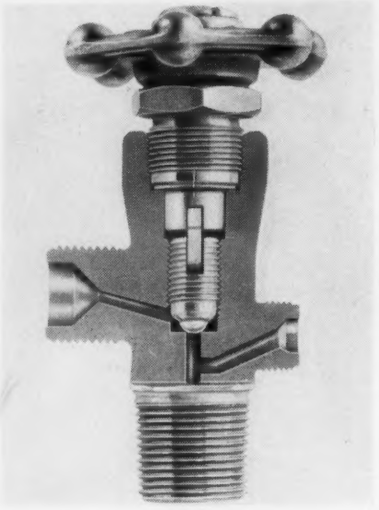

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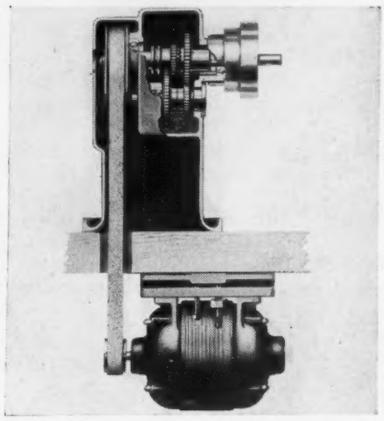
ADVERTISING PAGES REMOVED

NEW EQUIPMENT



Motor drive unit employed on Pratt & Whitney bench lathe

tion to a complete motor drive unit now available for its bench lathe. As shown in the accompanying illustration, the motor is mounted beneath the bench on a hinged platform so arranged that the driving belt is tightened by adjusting the platform. The belt goes up through a slot in the bench to the driving pulley inside the unit, and the drive is through a two-speed gear box to a three-step cone pulley corresponding to the one on the headstock of the lathe.

A lever on the front of the unit engages either the low or the high-speed range as desired and provides a neutral position. A swinging idler attached to the side of the unit maintains tension in the belt connecting the two cone pulleys. A one-half horsepower motor is used, producing cone speeds of 205 and 820 revolutions per minute, and six spindle speeds ranging from 145 to 1400 revolutions per minute.

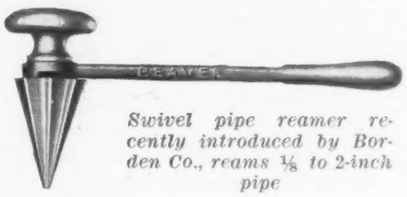
♦ ♦ ♦

Photographic Printer—Paragon-Revolute Corp., 77 South avenue, Rochester, N. Y., recently introduced a photographic printer by which any one sided copy that is semitranslucent may be reproduced in the same manner as by a camera with reflected light, through a lens. With this machine, shown herewith, it is possible to make a blueprint from a blueprint, a tracing of part of an assembly drawing for a detail part drawing, photo copies of letters or drawings and similar reproductions.

Photographic material suitable for use on the printer can be broadly described as paper and tracing cloth sensitized with regular and orthochromatic emulsions. The orthochromatic emulsions are color sensitive while the regular emulsions are not.

♦ ♦ ♦

Swivel Pipe Reamer—Borden Co., Warren, O., is placing on the market a new swivel pipe reamer which reams ⅛ to 2-inch pipe. Handle and



Swivel pipe reamer recently introduced by Borden Co., reams ⅛ to 2-inch pipe

knob are made of malleable iron while the reamer is of alloy steel, heat treated. It can be resharpened over and over, and when finally worn out, the head can be replaced at moderate cost, the manufacturer asserts. The tool is shown in the accompanying illustration.

♦ ♦ ♦

Endless Belt—B. F. Goodrich Co., Akron, O., recently issued an announcement that Fred G. Skeyhan, a member of its technical staff, has perfected a revolutionary method of making belts endless. He conceived the idea of embedding or countersinking the seam below the surface of the belt in such a position as to relieve the seam from strain and shield it from wear or windage. This protection is made possible by a thick cushion of rubber reinforced with bias fabric which is permanently vulcanized into position.

Although the "plylock" belt joint has been used successfully in the field by several companies during the last year or two, only recently was it definitely decided to offer it for public use. Patents for the process have been applied for by Goodrich who will license agents, jobbers, and users.

♦ ♦ ♦

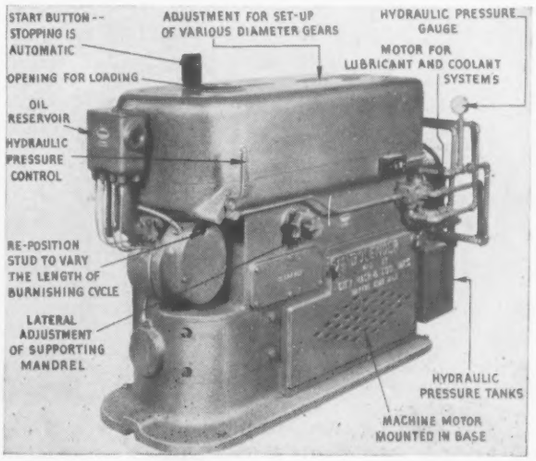
Burnishing Machine—City Machine & Tool Works, East Third at June, Dayton, O., recently introduced a Bolender burnisher, shown herewith. Burnishing is accomplished by three hardened steel master gears meshing under controlled pressure with the work gear. The latter is set on a mandrel, but the mandrel is only an approximate locator. The work gear when rotating, actually floats between the burnishing gears in fixed alignment.

All burnishing is done with the work gear vertical in order to effectively eliminate distortion or sag resulting from unequal distribution of weight. Two of the master gears are movable laterally toward the work gear by means of a piston and slide actuated by air or hydraulic pressure. Pressure developed between the burnishing gears and the work gear is read on a conveniently located open face gage.

Loading is accomplished easily and quickly by merely setting the work gear on its mandrel. Rotation of the gears starts when the operator throws the pressure control lever and presses a single push button switch. This rotation continues through a given number of revolutions in one

Left—Blueprints can be made from other blueprints with this improved photographic printer developed by Paragon-Revolute Corp.

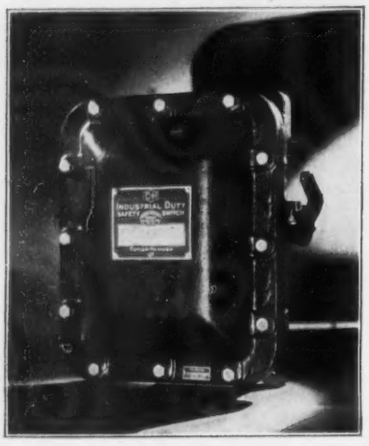
Right—This Bolender burnisher is a completely automatic machine built in four sizes which handle gears from ½ to 24 inches outside diameter in single units or as cluster gears. It processes either spur or helical gears


START BUTTON -- STOPPING IS AUTOMATIC
ADJUSTMENT FOR SET-UP OF VARIOUS DIAMETER GEARS
HYDRAULIC PRESSURE GAUGE
MOTOR FOR LUBRICANT AND COOLANT SYSTEMS
OPENING FOR LOADING
OIL RESERVOIR
HYDRAULIC PRESSURE CONTROL
RE-POSITION STUD TO VARY THE LENGTH OF BURNISHING CYCLE
LATERAL ADJUSTMENT OF SUPPORTING MANDREL
HYDRAULIC PRESSURE TANKS
MACHINE MOTOR MOUNTED IN BASE

direction, then automatically reverses and runs a similar number of revolutions in the opposite direction, whereupon it stops. The number of revolutions may be varied at will from three to 25.

♦ ♦ ♦

Explosion-Proof Safety Switches—Cutler-Hammer Inc., Milwaukee, is bringing out a new line of explosion-proof safety switches for use in class I, group D, hazardous locations. This new line includes both single and



Cutler-Hammer explosion-proof industrial safety switch

double-throw types, in standard sizes up to 200 amperes capacity.

The switch, shown herewith, is a heavy, industrial duty type A construction, with outside operating handle, mounted in a heavy weatherproof, semi-steel cast enclosure, complying with requirements of the national electrical code. A precision machined flange of required width, between the case and cover, assures proper cooling of any flame which might occur from an explosion within the case, so that outside gases will not ignite. Corrosion resisting bolts hold the cover firmly in place.

Two pipe threaded conduit holes are provided in the bottom of the case and pads at the side and top of the case allow for drilling other holes if needed. Provisions are made for padlocking the handle in either position. It accommodates three padlocks in "off" and three padlocks in "on" positions to meet specific industry requirements such as in steel mills, etc.

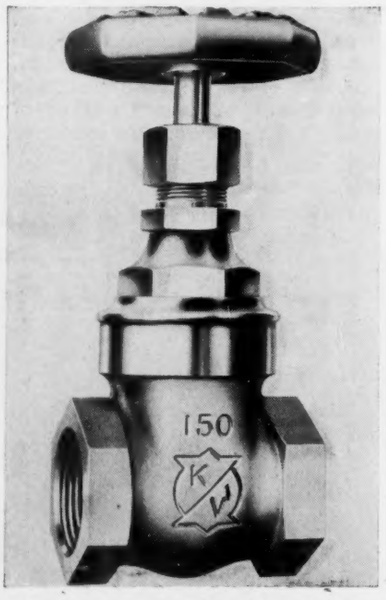
♦ ♦ ♦

Bronze Bars—Aluminum Industries Inc., Cincinnati, is bringing attention to a forward stride in the production manufacture of special bearings, bushings, fittings and small parts now made possible though the development of Permite leaded phosphor bronze bars. These bronze bars are available in standard six foot lengths in diameters from ⅝ to 2, by 1/16-inch steps. All standard bearing bronze alloys may be supplied. According to claims, this development provides a stock of superior bearing qualities for screw machine or turret lathe production. It represents the first time that leaded bearing bronze has ever been produced in machine lengths. The stock is said to possess exceptionally free machining qualities. Using tungsten carbide tools, it has been successfully machined at speeds in excess of 1500 surface feet per minute, without a coolant. A turned finish has been adopted for these bars.

♦ ♦ ♦

Bronze Gate Valve — Kennedy Valve Mfg. Co., Elmira, N. Y., recently placed on the market a new heavy standard bronze gate valve designed for 150 pounds working steam pressure and 250 pounds working water, oil or gas pressure. One of the features of this unit, shown herewith, is the large bonnet hex which is placed close to the body to make the entire valve more rigid and also to assist easier removal of the bonnet and stem assembly when the valve is installed with close clearances.

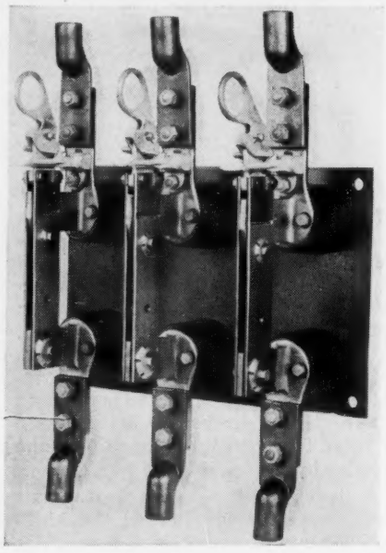
Another important feature is the design of the stem which is made of specially tough bronze, has an unusually large number of heavy contact threads, and has a flexible connection between the stem head and the disk, making stripping of threads almost impossible and prolonging the life of the valve. Additional features are the deep stuffing box with graphite molded packing rings, bronze gland and heavy packing nut, the substantial non-heating non-slipping handwheel, and the heavy pipe end hexes. These valves are built in a complete range of sizes up to 3 inches.



Kennedy heavy standard bronze gate valve has large bonnet hex

♦ ♦ ♦

Indoor Disconnecting Switches—General Electric Co., switchgear sales division, Philadelphia, recently brought out a new line of indoor dis-



General Electric disconnecting switch mounted on molded insulators

connecting switches, with ratings as high as 1200 amperes at 5000 volts, featuring silver-to-silver line-pressure contacts. The silver, applied to the contacts by a special process which produces a surface of usual wearing qualities, eliminates troublesome oxidation and its inherent disadvantages. A test, consisting of 30,000 opening and closing operations, failed to harm the silver-contact surfaces, it is claimed.

The complete line includes hook-operated, single- and double-throw, double-blade transfer units with half or full capacity blades, single-throw tandem transfer switches with full capacity blades, and group-operated switches controlled manually or electrically. The single- or multi-pole switches are mounted on compound insulators and metal bases. The insulators are made of non-inflammable, arc-resisting cold-molded material and have a dry flashover of 25 kilovolts. The illustration above shows a 5000-volt, 600-ampere, 3-pole, single-throw type LG-118-B switch mounted on 5000-volt molded insulators and steel base.

USS

PLYKROME

can be welded

. . . or hot formed

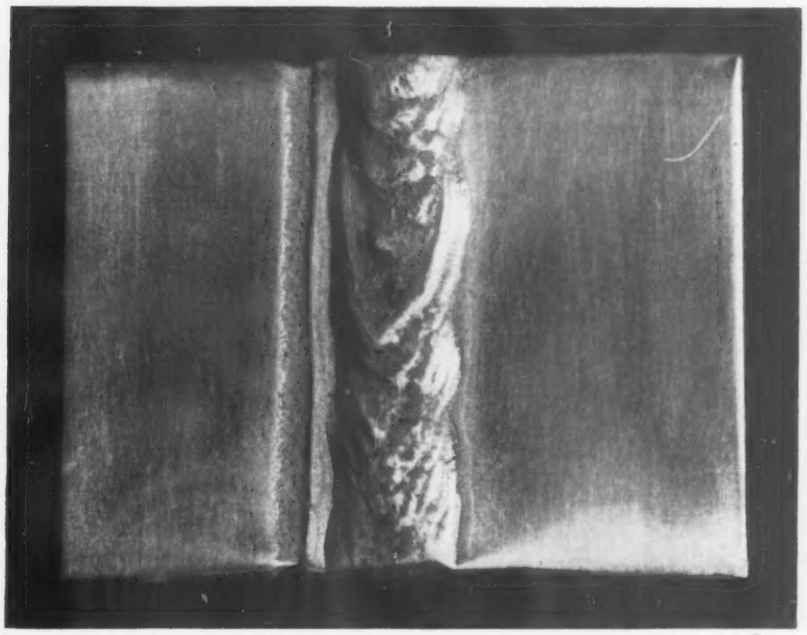
without subsequent heat treatment

For those articles in which heat treatment is difficult or impossible after fabrication, USS Plykrome is ideally suited. Its corrosion-proof surface is of Stabilized USS 18-8 Stainless Steel. This special stainless resists intergranular attack even under the most severely corrosive conditions.

As a consequence Plykrome can be welded successfully or subjected to high temperatures during fabrication or service without loss of its corrosion-resistant qualities. Furthermore, the stabilizing treatment given to Plykrome to insure its resistance to corrosion is such that the steel backing is put into the best possible condition for forming. This unique quality makes Plykrome a practical metal for many applications which cannot employ unstabilized stainless steel.

Additional information on the use of Plykrome in specified installations may be had upon request.

A striking indication of the difference between ordinary 18-8 stainless and the stabilized 18-8 used as the surface veneer on USS Plykrome. Here a piece of low carbon USS 18-8 (on the left) has been welded to USS Stabilized 18-8 (on the right) and subsequently put in an acid bath. Note the manner in which the unstabilized steel has been corroded adjacent to the weld. The stabilized stainless, however, is entirely free from attack.



USS STEEL

Illinois Steel Company

208 S. LA SALLE STREET, CHICAGO, ILL.

SUBSIDIARY OF UNITED STATES STEEL CORPORATION

U S S CHROMIUM-NICKEL ALLOY STEELS ARE PRODUCED UNDER LICENSES OF THE CHEMICAL FOUNDATION, INC., NEW YORK, AND FRIED. KRUPP A. G. OF GERMANY

First Half Iron Output Rate Is Double 1933

Compiled by American Iron and Steel Institute

HALF-YEARLY OUTPUT OF PIG IRON AND FERRO-ALLOYS BY STATES

HALF-YEARLY PRODUCTION OF PIG IRON BY STATES *

States	Blast furnaces (a)				Production of pig iron not including ferro-alloys—Gross tons		
	In blast Dec. 31, 1933	June 30, 1934			First half of 1933	Second half of 1933	First half of 1934
		In	Out	Total			
Massachusetts	0	0	1	1	126,559	539,369	644,348
New York	6	6	12	18			
Pennsylvania	17	23	59	82	1,148,125	2,580,714	2,658,638
Maryland	3	3	3	6			
Virginia	0	0	5	5			
West Virginia	1	3	0	3	415,104	728,496	815,529
Kentucky	1	2	0	2			
Tennessee	0	0	4	4			
Alabama	9	10	15	25	227,378	672,792	766,271
Ohio	17	25	28	53	1,514,120	2,404,603	2,736,848
Illinois	4	6	19	25	387,818	624,858	731,145
Indiana	5	6	12	18	502,047	967,736	1,202,325
Michigan	4	6	2	8			
Minnesota	0	0	3	3			
Iowa	0	0	0	0			
Missouri	0	0	1	1	68,826	92,174	113,911
Colorado	1	1	2	3			
Utah	1	1	0	1			
Total	69	92	166	258	4,389,977	8,610,742	9,669,015

(a) Completed and rebuilding pig iron furnaces.

HALF-YEARLY PRODUCTION OF COKE PIG IRON BY STATES *

Massachusetts	0	0	1	1	126,559	539,369	644,348
New York	6	6	12	18			
Pennsylvania	17	23	59	82	1,148,125	2,580,714	2,658,638
Maryland	3	3	3	6			
Virginia	0	0	5	5			
West Virginia	1	3	0	3	413,398	717,227	815,529
Kentucky	1	2	0	2			
Tennessee	0	0	3	3			
Alabama	9	10	15	25	227,378	672,792	766,271
Ohio	17	25	28	53	1,514,120	2,404,603	2,736,848
Illinois	4	6	19	25	387,818	624,858	731,145
Indiana	5	6	12	18	497,440	952,377	1,192,817
Michigan	2	4	0	4			
Minnesota	0	0	3	3			
Iowa	0	0	0	0			
Missouri	0	0	1	1	68,826	92,174	113,911
Colorado	1	1	2	3			
Utah	1	1	0	1			
Total	67	90	163	253	4,383,664	8,584,114	9,659,507

HALF-YEARLY PRODUCTION OF CHARCOAL PIG IRON BY STATES *

Tennessee	0	0	1	1	6,313	26,628	9,508
Michigan	2	2	2	4			
Total	2	2	3	5	6,313	26,628	9,508

HALF-YEARLY PRODUCTION OF ALL KINDS OF FERRO-ALLOYS BY STATES †

New York	1	1	0	1	24,850	74,007	73,103
New Jersey	0	0	0	0			
Pennsylvania	2	3	8	11	52,879	110,919	74,891
Maryland	0	0	0	0			
Virginia	0	0	1	1			
West Virginia	0	0	0	0	8,459	10,383	33,915
Tennessee	0	1	1	2			
Alabama	1	0	0	0			
Ohio	2	1	1	2	12,720	50,666	76,032
Iowa	0	0	0	0			
Total	6	‡6	11	‖17	98,908	245,975	257,941

HALF-YEARLY PRODUCTION OF PIG IRON AND FERRO-ALLOYS ACCORDING TO FUEL USED

Coke pig iron	67	90	163	253	4,383,664	8,584,114	9,659,507
Charcoal pig iron	2	2	3	5	6,313	26,628	9,508
Total pig iron	69	92	166	258	4,389,977	8,610,742	9,669,015
Total ferro-alloys	6	6	11	17	†98,908	†245,975	†257,941
Grand total	75	98	177	275	4,488,885	8,856,717	9,926,956

* Does not include the production of ferro-manganese, spiegeleisen, ferro-silicon, or other ferro-alloys.

† Includes ferro-manganese, spiegeleisen, ferro-silicon, and other ferro-alloys made in blast furnaces or in electric furnaces.

‡ During the first half of 1934 there were 12 blast furnaces which made ferro-alloys only or ferro-alloys and pig iron.

‖ Blast furnaces only; electric furnaces not included.

HALF-YEARLY OUTPUT OF PIG IRON BY GRADES AND FERRO-ALLOYS BY KINDS

HALF-YEARLY PRODUCTION OF BASIC PIG IRON, GROSS TONS

States	First half of 1933	Second half of 1933	First half of 1934
New York	111,276	287,148	367,913
Pennsylvania—Allegheny County	376,735	831,654	801,228
Pennsylvania—Other counties	331,309	832,493	907,209
Maryland, West Va., Kentucky, Ala.	448,970	841,083	1,044,459
Ohio	723,734	1,367,522	1,568,321
Indiana, Illinois	450,973	960,006	1,184,884
Michigan, Colorado, Utah	139,005	250,694	373,678
Total	2,582,002	5,370,600	6,247,692

HALF-YEARLY PRODUCTION OF BESSEMER AND LOW-PHOSPHORUS PIG IRON, GROSS TONS

Pennsylvania	325,751	795,792	766,525
New York, Md., W. Va., Alabama	100,885	232,072	277,157
Ohio	673,236	736,406	812,772
Indiana, Illinois	250,518	359,195	335,401
Total	1,350,390	2,123,465	2,191,855
Including low-phosphorus pig iron		38,514	44,571

HALF-YEARLY PRODUCTION OF FOUUDRY PIG IRON, GROSS TONS

New York	102,830	273,577	231,512
Pennsylvania			
Kentucky, Tennessee, Alabama	98,620	379,285	320,437
Ohio	24,707	82,425	85,993
Illinois, Michigan, Colorado, Utah	28,602	65,576	53,745
Total	254,759	800,863	691,687

HALF-YEARLY PRODUCTION OF MALLEABLE PIG IRON, GROSS TONS

New York	15,065	45,605	148,166
Pennsylvania			
Ohio	90,580	213,544	263,301
Indiana, Illinois	85,269	44,977	94,037
Total	190,914	304,126	505,504

HALF-YEARLY PRODUCTION OF FERRO-ALLOYS BY KINDS GROSS TONS

Ferro-manganese and spiegeleisen	50,648	112,116	90,516
Ferro-silicon	34,816	119,920	150,438
Ferro-phos. and all other ferro-alloys	13,444	13,939	16,987
Total	98,908	245,975	257,941

PIG IRON AND FERRO-ALLOYS MADE FOR SALE OR FOR USE OF MAKERS IN THE FIRST SIX MONTHS OF 1934, GROSS TONS

Pig iron and ferro-alloys	For sale	For maker's use	Total
Pig iron:			
Basic	286,003	5,961,689	6,247,692
Bessemer and low-phosphorus	125,010	2,066,845	2,191,855
Foundry	653,797	37,890	691,687
Malleable	395,823	109,681	505,504
Forge or mill	19,204		19,204
White and mottled, direct castings, etc.	4,114	8,959	13,073
Total pig iron	1,483,951	8,185,064	9,669,015
Ferro-alloys:			
Ferro-manganese and spiegeleisen	47,606	42,910	90,516
Ferro-silicon	148,966	1,472	150,438
All other ferro-alloys	16,469	518	16,987
Total ferro-alloys	213,041	44,900	257,941
Total pig iron and ferro-alloys	1,696,992	8,229,964	9,926,956

Markets Clouded, with 6-Point Drop in Rate

Operations 21½ Per Cent—Automotive, Government Work, Most Promising—Many Finishing Mills Idle—First Navy Bids Bring Code Prices

SEVEN weeks have elapsed since consumers stocked up with steel, and the failure of new demands to appear long after the time anticipated, with widespread labor difficulties and increasing uncertainties regarding government policies, is exerting a pronounced depressing influence in the markets.

Scanning the immediate horizon, steelmakers can see only prospects for additional government work and some revival in automobile requirements. Steelworks operations last week were reduced 6 points to 21½ per cent.

To find a counterpart of the doubt that prevails among steel sellers it is necessary to go back to the beginning of the administration's recovery program. A year of the steel code—the anniversary of which fell on Sunday—finds steel wages, prices and employment enhanced 8 to 10 per cent, and iron and steel production down 55 to 57 per cent.

Automobile output, continuing to decline, last week was slightly under 54,000 cars, though the recession is meeting with unusual resistance, the reduction in output from the week of July 14 being only 20 per cent.

Some prolonged shutdowns in the automobile industry will be made over the Labor day period and September is expected to be the slowest in motorcar productivity since January. Though the first steel tonnage releases for 1935 models appear to be scheduled for that month, it is generally believed that it will be late in September or October before actual rolling of the steel commences.

Few Structural Projects Figured; Some Gain Expected In Agricultural Demand

While many of the lighter finished steel rolling mills are idle, awaiting accumulations of miscellaneous orders, structural shape mills are operating at a relatively high rate, mainly on goverment awards. Architects and engineers have few new projects before them; a survey of 40 in one of the leading industrial districts last week revealed prospective steel tonnage from the total number is less than 2000 tons. Structural awards for the week totaled 12,692 tons.

Rail mills this month are completing the last of the rail orders placed earlier in the year under government sponsorship. Railroad equipment repair this year generally has not measured up to expectations, due to mounting costs—estimates in some instances exceeding federal loans. The Baltimore & Ohio has opened several car and locomotive repair departments to complete its PWA repair program. Illinois Central is to award 11 diesel locomotives this month.

Steelmakers look for a fairly good seasonal recovery in agricultural requirements the fall, basing hopes on the increase in farm product prices and government subsidies, to offset some of the loss caused by the drouth.

Shipments One-Fourth to One-Fifth June Rate; Prices Firm on Navy Bids

Though actual steel bookings so far this month are larger than for the comparable period in July, orders chiefly are for rounding out inventories. In some districts the volume is 50 per cent larger, though tonnage is far below anticipated quotas. Current shipments are one-fifth to one-fourth those of June.

Notable among specific orders is an award of 2000 tons of steel pipe for Standard Oil of California, with prospects for early placing of 14,000 additional tons for a 108-mile line. The department of agriculture has purchased 749 tons of telephone wire.

Within two weeks steelmakers will begin to formulate prices for fourth quarter, to open books Sept. 1. Reduced demand has precluded any broad test of the increases named for third quarter. Last week bids on the 12 naval ships to be built by private yards were opened and apparently full code prices were quoted. The real test, however, is expected shortly when the government—offering to let steelmakers cut code prices 15 per cent—receives bids for 12 ships for construction in the navy's yards. These 24 vessels require approximately 40,000 tons of steel.

Steelworks operations at Pittsburgh last week, dropped 4 points to 15 per cent; Chicago 4 to 28; Wheeling 4 to 26; Cleveland 19 to 13; Buffalo 9½ to 23½; eastern Pennsylvania 2½ to 20½; New England 9 to 29; and Youngstown 16 to 22. Birmingham advanced 5 points to 25 per cent, while Detroit held at 77 per cent.

STEEL's price composites are unchanged, the iron and steel index holding at $32.23; finished steel, $54; and steelworks scrap, $9.96.

COMPOSITE MARKET AVERAGES

	Aug. 18	Aug. 11	One Month Ago July, 1934	Three Months Ago May, 1934	One Year Ago Aug., 1933	Five Years Ago Aug., 1929
Iron and Steel Composite	$32.23	$32.23	$32.32	$32.97	$29.92	$36.36
Finished Steel Composite	54.00	54.00	54.05	54.80	47.50	57.93
Steelworks Scrap Composite	9.96	9.96	10.30	11.30	11.57	16.46

Iron and Steel Composite:—Pig iron, scrap, billets, sheet bars, wire rods, tin plate, wire, sheets, plates, shapes, bars, black pipe, rails, alloy steel, hot strip and cast iron pipe. Finished Steel Composite:—Plates, shapes, bars, hot strip, nails, tin plate, pipe. Steelworks Scrap Composite:—Heavy melting steel and compressed sheets.

A COMPARISON OF PRICES

Representative Market Figures for Current Week; Average for Last Month, Three Months and One Year Ago

	Aug. 18, 1934	July 1934	May 1934	Aug. 1933
Finished Material				
Steel bars, Pittsburgh	1.80	1.80	1.90	1.60
Steel bars, Chicago	1.85	1.85	1.95	1.70
Steel bars, Philadelphia	2.09	2.09	2.19	1.91
Iron bars, Terre Haute, Ind.	1.75	1.75	1.75	1.65
Shapes, Pittsburgh	1.80	1.80	1.85	1.60
Shapes, Philadelphia	2.00½	2.00½	2.05½	1.81½
Shapes, Chicago	1.85	1.85	1.90	1.70
Tank plates, Pittsburgh	1.80	1.80	1.85	1.60
Tank plates, Philadelphia	1.98½	1.98½	2.03½	1.79½
Tank plates, Chicago	1.85	1.85	1.90	1.70
Sheets, No. 10, hot rolled, Pitts.	1.85	1.85	2.00	1.65
Sheets, No. 24, hot ann., Pitts.	2.40	2.45	2.65	2.25
Sheets, No. 24, galvan., Pitts.	3.10	3.10	3.25	2.85
Sheets, No. 10, hot rolled, Gary	1.95	1.95	2.10	1.80
Sheets, No. 24, hot anneal., Gary	2.55	2.55	2.75	2.35
Sheets, No. 24, galvan., Gary	3.20	3.20	3.35	2.95
Plain wire, Pittsburgh	2.30	2.30	2.30	2.10
Tin plate, per base box, Pitts.	5.25	5.25	5.25	4.25
Wire nails, Pittsburgh	2.60	2.60	2.60	2.10
Semifinished Material				
Sheet bars, open-hearth, Youngs.	$28.00	28.40	30.00	26.00
Sheet bars, open-hearth, Pitts.	28.00	28.40	30.00	26.00
Billets, open-hearth, Pittsburgh	27.00	27.40	29.00	26.00
Wire rods, Pittsburgh	38.00	38.00	38.00	35.00

	Aug. 18, 1934	July 1934	May 1934	Aug. 1933
Pig Iron				
Bessemer, del. Pittsburgh	19.76	19.76	19.76	18.26
Basic, Valley	18.00	18.00	18.00	16.00
Basic, eastern, del. eastern Pa.	19.76	19.76	19.76	17.20
No. 2 foundry, del. Pittsburgh	19.26	19.26	19.26	17.76
No. 2 foundry, Chicago	18.50	18.50	18.50	17.00
Southern, No. 2, Birmingham	14.50	14.50	14.50	13.00
No. 2X, Eastern del. Philadelphia	20.63	20.63	20.63	17.88
Malleable, Valley	18.50	18.50	18.50	16.50
Malleable, Chicago	18.50	18.50	18.50	17.00
Lake Superior charcoal, del. Chi.	23.54	23.54	23.54	23.04
Gray forge, del. Pittsburgh	18.88	18.88	18.88	17.13
Ferromanganese, del. Pittsburgh	89.79	89.79	90.24	87.24
Scrap				
Heavy melting steel, Pittsburgh	$11.25	12.00	12.80	13.75
Heavy melt. steel, No. 2, east. Pa.	8.50	8.90	9.00	10.50
Heavy melting steel, Chicago	9.50	9.55	10.85	10.40
Rails for rolling, Chicago	10.75	10.85	12.15	11.25
Railroad steel specialties, Chicago	10.25	10.50	12.40	11.15
Coke				
Connellsville, furnace, ovens	3.60	3.60	3.45	2.75
Connellsville, foundry, ovens	4.60	4.60	4.60	3.10
Chicago, by-product foundry, del.	9.25	9.25	9.25	8.25

Steel, Iron, Raw Material and Metals Prices

Prices conform to American Iron and Steel institute schedules. Asterisk denotes price change this week

Sheet Steel

HOT ROLLED No. 10
(24 to 48 inches wide)

Pittsburgh, base	1.85c
Gary, base	1.95c
Chicago, del.	1.98c
New York, del	2.18c
Philadelphia, del.	2.14c
Birmingham, base	2.00c
St. Louis, del.	2.17c
F.o.b. cars, dock, Pacific ports	2.40c

HOT ROLLED ANN. No. 24

Pittsburgh, base	2.40c
Gary, base	2.50c
Chicago, del	2.53c
Detroit, del.	2.60c
New York, del.	2.73c
Philadelphia, del.	2.69c
Birmingham, base.	2.55c
St. Louis, del	2.72c
F.o.b. cars, dock, Pacific ports	3.05c

GALVANIZED No. 24

Pittsburgh, base	3.10c
Gary, base	3.20c
Chicago, del	3.23c
Philadelphia, del.	3.39c
New York, del.	3.43c
Birmingham, base.	3.25c
St. Louis, del	3.42c
San Francisco, f.o.b. cars, dock	3.70c

TIN MILL BLACK No. 28

Pittsburgh, base	2.75c
Gary, base	2.85c
St. Louis, del.	3.07c

COLD ROLLED No. 10

Pittsburgh, base	2.50c
Gary, base	2.60c
Detroit, delivered	2.70c
Philadelphia, del.	2.79c
New York, del	2.83c
F.o.b. cars, dock, Pacific ports	3.10c

COLD ROLLED No. 20

Pittsburgh, base	2.95c
Gary, base	3.05c
Detroit, delivered	3.15c
Philadelphia, del.	3.24c
New York, del	3.28c

ENAMELING SHEETS

Pittsburgh, No. 10.	2.50c
Pittsburgh, No. 20.	3.10c

Tin and Terne Plate

Per 100-lb. box, Pittsburgh. Gary base, 10 cents higher

Tin plate, coke base contract	$5.25
Do., stock	$4.90
Long ternes, No. 24 unassorted	3.40c

Corrosion and Heat Resistant Alloys

Base, Pittsburgh

18% chrome, 8% nickel; sheets 35c; plates, 28c; bars, 24c; hot-rolled strip, 24.50c; cold-rolled strip, 2.00c.

	A	B	C	D
Bars	17c	18.5c	21c	26c
Plates	20c	21.5c	24c	29c
Sheets	25c	28c	31c	35c
Hot strip	17c	18.5c	21c	26c
Cold strip	22.5c	24c	27c	35c

Carbon 0.12 and under; no nickel. A has chrome 15% and under. B over 15/18% inc., C over 19/23% inc., D over 23/30%.

Steel Plates

Pittsburgh, base	1.80c
New York, del	2.08c
Philadelphia, del.	1.98½c
Boston, del.	2.20c
Buffalo, del.	2.03½c
Chicago or Gary base	1.85c
Cleveland, del.	1.98½c
Birmingham, base	1.95c
Coatesville, base	1.90c
Sparrows Pt., base	1.90c
Pacific Coast, f.o.b. cars, dock	2.35c
St. Louis, del.	2.07c

Structural Shapes

Pittsburgh, base	1.80c
Philadelphia, del	2.00½c
New York, del.	2.05¼c
Boston, del.	2.18½c
Bethlehem, base	1.90c
Chicago, base	1.85c
Cleveland, del.	1.98½c
Buffalo, base	1.90c
Gulf ports	2.20c
Birmingham, base	1.95c
Pacific Coast, f.o.b. cars, dock	2.35c

Bars

SOFT STEEL

Pittsburgh, base	1.80c
Chicago or Gary	1.85c
Duluth, base	1.95c
Birmingham, base	1.95c
Cleveland, base	1.85c
Buffalo	1.90c
Detroit, del.	1.95c
Pacific Coast ports cars, dock, c.i.f.	2.35c
Philadelphia, del.	2.09c
Boston, del.	2.20c
New York, del.	2.13c
Pitts., forg. qual.	1.95c-2.05c

RAIL STEEL
To Manufacturing Trade

Pittsburgh base	1.70c
Chicago or Gary, base	1.75c
Moline, Ill., base	1.75c
Cleveland, base	1.75c
Buffalo, base	1.80c

IRON

Terre Haute, Ind.....	1.75c
Chicago	1.80c
Philadelphia, base..	1.89c
Pittsburgh, refined	2.75c-7.50c

REINFORCING

New billet, cut lengths, carlots

Pittsburgh	2.05c
Chicago, Gary, Buffalo Cleve., Birm., Young....	2.10c
Gulf ports	2.45c
Pacific coast ports	2.35c
Philadelphia, del.	2.34c

Rail Steel

Pittsburgh, base	1.90c
Chicago, Buffalo, Cleveland, Birm., Young.....	1.95c
Gulf ports	2.30c

Wire Products □ □

(Prices apply to straight or mixed carloads; pool cars, or less, 10c up. 10% dis, on nail extras on straight or mixed carloads to one consignee.)

Base, Pittsburgh-Cleveland (Per 100-lb. keg)

Standard wire nails	$2.60
Cement coated nails	2.60
Galvanized nails, 15 gage and coarser	4.60c
Do., 16 gage and finer..	5.10c

(Per pound)

Polished staples	3.30c
Galvanized fence staples	3.55c
Barbed wire, galv.	3.00c
Annealed fence wire	2.45c
Galvanized fence wire....	2.80c
Woven wire fencing (base column, c.l.).....	$63.00
Plain wire, 6-9 gage to mfg. trade	2.30c

Anderson, Ind., (merchant products only) and Chicago up $1; Duluth up $2; Birmingham up $3.

Spring wire	3.20c

Chicago $1 higher, Worcester $2 higher.

Cold-Finished Carbon Bars and Shafting □ □

Base Pitts., one size, shape, grade, shipment at one time to one destination

10,000 to 19,999 lbs	2.10c
20,000 to 59,999 lbs.	2.05c
60,000 to 99,999 lbs.....	2.00c
100,000 lbs. and over 1.97½c	

Gary, Ind., Cleveland, up 5c; Buffalo, up 10c; Detroit, up 20c; eastern Michigan, up 25c.

Alloy Steel Bars □

Hot Rolled

Pittsburgh, Buffalo, Chicago, Massillon, Canton, Bethlehem	2.45c

S.A.E.	Alloy Diff.	S.A.E.	Alloy Diff.
2000	0.25	3100	0.55
2100	0.55	3200	1.35
2300	1.50	3300	3.80
2500	2.25	3400	3.20

4100 .15 to .25 Mo.....0.50
4600 .20 to .30 Mo. 125-1.75 Ni. 1.05
5100 .80-1.10 Cr. 0.45
5100 Cr. spring .....base
6100 bars 1.20
6100 spring 0.70
Cr., Ni., Van. 1.50
Carbon van. 0.95
9250....Carbon base plus extras

Strip and Hoops □

Hot strip to 23½-in.

Pittsburgh	1.85c
Chicago, base	1.95c
Birmingham, base	2.00c
Detroit, delivered	2.05c
Phila., delivered..	2.14c
New York, del ..	2.18c
Cooperage hoop, Pittsburgh	1.95c
Chicago	2.05c
Cold-rolled strip, Pitts., Cleve.	2.60c
Worcester, Mass.	2.80c

Rails, Track Material □

(Gross Tons)

Standard rails, mill	$36.37½
Relay rails, Pitts.	
24-45 lbs.	$27.00
50-60 lbs.	$24.00
70-75 lbs.	$18.00
80-85 lbs.	$25.00
100 lbs.	$26.00
Light rails, billet qual., Pittsb., Chi..	$25.00
Do., reroll. qual..	$34.00
Angle bars, mills....	2.55c
Spikes, R. R. base..	2.40c
Track bolts, base....	3.55c
Tie plates, base	1.90c

Base, light rails 25 to 40 lbs.; 50 to 60 lbs. inclusive up $5; 16 and 20 lbs., up $1; 12 lbs., up $8; 8 and 10 lbs., up $5. Base railroad spikes 200 kegs or more; base tie plates 20 tons.

Bolts and Nuts □ □

Pittsburgh, Cleveland, Birmingham, Chicago. Discounts to legitimate trade for all case lots. Dec. 1, 1932, lists.

CARRIAGE BOLTS

All sizes, cut thread	70 off
Rolled thread, ½ x 6 and smaller	70 off

MACHINE BOLTS

All sizes, cut thread, lag screws, plow bolts, Nos. 1-2-3-7 heads, tap bolts, blank bolts, stud bolts, without nuts	70 off
Tire bolts	60 off
Stove bolts, 75 off in pkgs.; 83 off in bulk, 15,000 or more of a size.	
Rolled thread machine bolts, ½x6 and smaller,	70 off
Step bolts	66 off
Elevator bolts	66 off

NUTS

Semifinished	70 off

HEXAGON CAP SCREWS

Milled	80-10-10 off
Upset 1-in., smaller	85 off

SQUARE HEAD SET SCREWS

Upset, 1-in., smaller....	75-10 off
Do., larger than 1-in..	75-10 off
Headless set screws	75 off

Rivets, Wrought Washers

Struc., c. l., Pittsburgh, Cleveland	2.90c
Struc., c. l., Chicago	3.00c
⅞-in. and smaller, Pitts., Chi., Cleve..	70 and 5 off
Wrought washers, Pitts., Chi., Phila..	6.00 off

Cut Nails □ □

Cut nails, Pitts.; (10% discount on size extras)	$2.75
Do. less carloads, 5 kegs or more no discount on size extras	$3.05
Do. less than 5 kegs; no discount on size extras	$3.20

Piling □ □

Pittsburgh	2.15c
Chicago, Buffalo	2.25c

Pipe and Tubing

Base $200 net ton, except on standard commercial seamless boiler tubes under 2 inches and cold drawn seamless tubing.

Welded Iron, Steel Pipe

Base discounts on steel pipe, Pitts., Lorain, O., to consumers in carloads, Gary, Ind., 2 points less. Chicago delivered 2½ points less. Wrought pipe, Pittsburgh base.

BUTT WELD

Steel

In.	Blk.	Gal.
¼ and ⅜	53½	35
½	58½	47
¾	62	52
1—3	64	55

Iron

½	31½	15
¾	36½	20½
1—1¼	39½	25 72
2	41½	26

LAP WELD

Steel

2	60	51
2½—3	63	54
3½—6	65	56
7 and 8	64	54
9 and 10	63½	53½

Iron

2	37	22½
2½—3½	38	25
4—8	40	28½

LINE PIPE

Steel

½, butt weld	57½
⅛-inch, but weld	50½
¼—⅜, buttweld	52½
¾, butt weld	61
1—3, butt weld	63
2-inch, lap weld	59
2½—3, lap weld	62
3½—6, lap weld	64
7—8, lap weld	63

Iron

⅛—1½-inch, black and galv. take 4 pts.. over; 2½—6-inch 2 pts. over discounts for same sizes, standard pipe lists. 8—12-inch, no extra.

BOILER TUBES

C. L. Discounts, f.o.b. Pitts.

Lap Weld Steel		*Charcoal Iron*	
2—2¼	33	1¾	8
2½—2¾	40	2—2¼	13
3	47	2½—2¾	16
3¼—3½	50	3	17
4	52	3¾—3½	18
4½—5	42	4	20
		4½	21

In lots of a carload or more, above discounts subject to preferential of two 5% and one 7½% discount on steel and 10% on charcoal iron.

Lapwelded steel: 2000 to 9999 pounds, ten points under base, one 5% and one 7½%. Under 2000 pounds 15 points under base, one 5% and one 7½%. Charcoal iron; 10,000 pounds to carloads, base less 5%; under 10,000 pounds, two points under base only.

SEAMLESS BOILER TUBES

Under date of May 15 in lots of 40,000 pounds or more for cold-drawn boiler tubes and in lots of 40,000 pounds or feet or more for hot-finished boiler tubes, revised prices are quoted for 55 cold-drawn boiler tube sizes ranging from ¼ to 6-inch outside diameter in 30 wall thicknesses, decimal equivalent from 0.035 to 1.000, on a dollars and cents basis per 100 feet and per pound.

Hot-finished carbon steel boiler tube prices also under date of May 15 range from 1 through 7 inches outside diameter, inclusive, and embrace 47 size classifications in 22 decimal wall thicknesses ranging from 0.109 to 1.000, prices also being on a lb. and 100 ft. basis.

Seamless Tubing □

Cold drawn; f.o.b. mill disc.

100 ft. or 150 lbs.	32%
15,000 ft. or 22,500 lbs.	70%

Cast Iron Water Pipe □

Class B Pipe—Per Net Ton

6-in. & over, Birm..	$38.00-39.00
4-in., Birmingham..	41.00-42.00
4-in., Chicago	49.00-50.00
6 to 24-in., Chicago..	46.00-47.00
5-in & over, east fdy	42.00
Do., 4-in.	45.00

Class A pipe $2 over Class B.

Stnd. fitgs., Birm. base..	$100.00

Semifinished Steel □

BILLETS AND BLOOMS

4 x 4-inch base; gross ton

Pitts., Chi., Cleve., and Youngstown..	$27.00
Philadelphia	32.30
Duluth	31.00
Forging, Pitts., Chi. and Buffalo	32.00
Forging, Duluth	36.00

SHEET BARS

Pitts., Cleve., Young., Chi., Buff., Canton, O., and Sparrows Point, Md., ..	28.00

SLABS

Pitts., Cleve., Young.	27.00

WIRE RODS

Pitts., Cleveland	38.00
Chicago	39.00
Worcester, Mass.	40.00

SKELP

Pitts., Chicago	1.70c

Coke □ □ □

Price Per Net Ton

BEEHIVE OVENS

Connellsville Fur....	$3.60- 3.85
Connellsville fdry ..	4.60
Connell. prem. fdy.	5.10- 5.35
New River fdry	6.00
Wise county fdry..	4.25- 5.00
Wise county fur....	3.50- 4.25

BY-PRODUCT FOUNDRY

Newark, N. J., del.	8.71- 9.31
Chi., ov., outside del.	8.50
Chicago, del	9.25
New England, Del...	10.50
St. Louis, del.	9.25
Birmingham, ovens	6.00
Indianapolis, del.	8.75
Cincinnati, del.	9.30
Cleveland, del.	9.25
Buffalo, ovens	7.50- 8.00
Detroit, ovens	8.50
Philadelphia, del.	9.00

Coke By-Products □

Per gallon, producers' plants.

Tank lots

	Spot
Pure benzol	$0.19
90 per cent benzol	$0.19
Toluol	0.30
Solvent naphtha.....	0.26
Commercial xylol ..	0.26

Per lb. f.o.b. New York

Phenol (200 lb. drums)..	0.163c
Do. (100 lbs.)	0.173c

Eastern Plants, Per Pound,

†Naphthalene flakes and balls, in bbl. ..	6.00

Per 100 lb. Atlantic seaboard

*Sulphate of ammonia	$1.20

†Western prices ½-cent up.

Pig Iron

Delivered prices do not include switching charges except as noted. No. 2 foundry iron is 1.75-2.25 silicon; 25-cent differentials apply for each 0.25 silicon above 2.25. Gross tons.

BASING POINTS:	No. 2 Fdry.	Malleable	Basic	Bessemer
Bethlehem, Pa.	$19.50	$20.00	$19.00	$20.50
Birdsboro, Pa.	19.50	20.00	19.00	20.50
Birmingham, Ala., southern del.	14.50	.....	13.50	19.00
Buffalo	18.50	19.00	17.50	19.50
Chicago	18.50	18.50	18.00	19.00
Cleveland	18.50	18.50	18.00	19.00
Detroit	18.50	18.50	18.00	19.00
Duluth	19.00	19.00	.....	19.50
Erie, Pa.	18.50	19.00	18.00	19.50
Everett, Mass.	19.50	20.00	19.00	20.50
Granite City, Ill.	18.50	18.50	18.00	.....
Hamilton, O.	18.50	18.50	18.00	19.00
Jackson, O.	20.25	20.25	19.75	.....
Neville Island, Pa.	18.50	18.50	18.00	19.00
Provo, Utah	17.50	.....	17.00	.....
Sharpsville, Pa.	18.50	18.50	18.00	19.00
Sparrows Point, Md.	19.50	.....	19.00	.....
Swedeland, Pa.	19.50	20.00	19.00	20.50
Toledo, O.	18.50	18.50	18.00	19.00
Youngstown, O.	18.50	18.50	18.00	19.00
DELIVERED FROM BASING POINTS:				
Akron, O., from Cleveland	19.76	19.76	19.26	20.26
Baltimore from Birmingham	20.02	.....	19.90	.....
Boston from Birmingham	19.62	.....	19.50	.....
Boston from Everett, Mass.	20.00	20.50	19.50	21.00
Boston from Buffalo	20.00	20.50	19.50	21.00
Brooklyn, N. Y., from Bethlehem	21.77	22.27	.....	.....
Brooklyn, N. Y., from Bmghm.	21.39	.....	.....	.....
Canton, O., from Cleveland	19.76	19.76	19.26	20.26
Chicago from Birmingham	†18.72	.....	18.60	.....
Cincinnati from Hamilton, O.	19.51	19.51	19.01	.....
Cincinnati from Birmingham	19.13	.....	19.01	.....
Cleveland from Birmingham	18.62	.....	18.50	.....
Indianapolis from Hamilton, O.	20.77	20.77	20.27	21.27
Mansfield, O., from Toledo, O.	20.26	20.26	19.76	20.76
Milwaukee from Chicago	19.50	19.50	19.00	20.00
Muskegon, Mich., from Chicago, Toledo or Detroit	21.40	21.40	20.90	21.90
Newark, N. J., from Birmingham	20.51	.....	.....	.....
Newark, N. J., from Bethlehem	20.89	21.39	.....	.....
Philadelphia from Birmingham	19.88	.....	19.76	.....
Philadelphia from Swedeland, Pa.	20.26	20.76	19.76	.....
Pittsburgh dist. from Neville Island	(Neville Island base, plus 63c, 76c and $1.13 switching chgs.)			
Saginaw, Mich., from Detroit	20.60	20.60	20.10	21.10
St. Louis from Granite City, Ill.	19.00	19.00	18.50	.....
St. Louis from Birmingham	18.62	.....	18.50	.....
St. Paul from Duluth	20.94	20.94	.....	21.44

†Over 0.70 phos.

LOW PHOS.

Basing Points: Birdsboro, Pa., Steelton, Pa., and Standish, N. Y.—$23.50. Basing Point: †Johnson City, Tenn.—$23.50 †Off grade material is $19.50

Philadelphia, standard and copper bearing 24.63

GRAY FORGE		CHARCOAL	
Valley furnace	18.25	Lake Superior fur.	21.00
Pitts. dist. fur.	18.25	Do., del. Chicago	24.04

SILVERY†

Jackson County, O., base; 6%—$22.75; 7—$23.75; 8—$24.75; 9—$25.75; 10—$26.75; 11—$27.75. Buffalo base prices $1.25 higher.

BESSEMER FERROSILICON†

Jackson County, O., base; 10%—$27.75; 11—$28.75; 12—$30.25; 13—$31.75; 14—$33.25; 15—$34.75; 16—$36.25. Buffalo base prices $1.25 higher.

†The lower all-rail delivered price from Jackson, O., or Buffalo is quoted with freight allowed.

Iron Ore

LAKE SUPERIOR ORE

Gross ton, 51½% Lower Lake Ports

Old range bessemer	$4.80
Mesabi nonbess.	4.50
High phosphorus	4.40
Mesabi bessemer	4.65
Old range nonbess.	4.65

EASTERN LOCAL ORES

Cents, unit, del. E. Pa.

Foundry and basic, 56-63% con. (nom.)	8.00- 9.00
Cop.-free low phos. 58-60% (nom.)	10.00-10.50

FOREIGN ORE

Cents per unit, f.a.s. Atlantic ports (nominal)

Foreign manganiferous ore, 45.55% iron, 6-10% man.	10.00
No. Afr. & low phos.	9.50
Swedish basic, 65%	9.00
Swedish low phos.	9.50
Spanish No. Africa basic, 50 to 60%.	9.00
Tungsten, spot, sh. ton unit, duty pd.	$17.75-18.25
N. F. fdy., 55%	7.00
Chrome ore, 48% gross ton, c.i.f.	$18.00

Manganese Ore

(Nominal)

Prices, not including duty, cents per unit, cargo lots.

Caucasian, 52-55%	24.00
So. African, 52%	24.00
So. Afr., 49-51%	22.00
Indian, 58-50%	nominal
Indian, 48-50%	nominal

Refractories

Per 1000 f.o.b. Works

FIRE CLAY BRICK

First Quality

Pa., Ill., Ky., Md., Ga., Mo.	$45.00
Alabama	45.00

Second Quality

Pa., Ill., Ky., Md., Mo., Ga., Ala.	40.00

Ohio

First quality	$40.00
Intermediary	36.00
Second quality	25.00

MALLEABLE BUNG BRICK

All bases	50.00

SILICA BRICK

Pennsylvania	$45.00
Joliet, E. Chicago	54.00
Birmingham, Ala.	52.00

MAGNESITE

Imported dead-burned grains, net ton f.o.b. Chester, Pa., and Baltimore bases	$45.00
Domestic dead-burned grains, net ton f.o.b. Chester, Pa., and Baltimore bases	40.00
Domestic dead-burned grains, net ton f.o.b. Chewelah, Wash.	22.00

BASIC BRICK

Net ton, f.o.b. Baltimore, Plymouth Meeting, Chester, Pa.

Magnesite brick	$65.00
Chrome brick	45.00
Chemically bonded magnesite	55.00

Fluorspar, 85-5

Washed gravel, duty paid, tide, net ton	$19.50
Washed gravel, f.o.b. Ill., Ky., net ton, carloads	$15.50-16.00

Ferroalloys

Dollars, except Ferrochrome

Ferromanganese, 78-82% tidewater, duty paid	85.00
Do., Balti. base	85.00
Do., del. Pittsburgh	89.79
Spiegeleisen, 19-20%, dom. fur. spot†	26.00
Ferrosilicon 50%, freight all., cl.	77.50
Do., less carload	85.00
Do., 75 per cent. Spot, $5 a ton higher.	126-130.00
Silicomang., 2½ carb.	90.00
2% carbon 95.00; 1%	105.00
Ferrochrome, 66-70 chromium, 4-6 carbon, cts. lb. con. del.	10.00
Ferrotungsten, stand., lb. cont. del.	1.35- 1.45
Ferrovanadium, 35 to 40% lb., cont., on analysis	2.70- 2.90
Ferrotitanium, c. l., prod. plant, frt. allow., net ton	137.50
Spot, 1 ton, frt. allow., lb.	7.00
Do., under 1 ton	7.50
Ferrophosphorus, per ton, c. l., 17-19%, Rockdale, Tenn., basis, 18%, $2 unitage	42.00
Ferrophosphorus, electrolytic, per ton c. l., 23-26% f.o.b. Anniston, Ala., 24% $2.75 unitage	55.00
Ferromolybdenum, stand. 50-60%, lb.	0.95
Molybdate, lb. cont.	0.80

†Carloads, Quan. diff. apply.

Nonferrous Mill Products

F.o.b. mill base, cents per lb. except as specified. Copper, brass products based on 9.00c Conn. copper

Sheets

Yellow brass (high)	14.50
Copper, hot rolled	16.00
Lead, cut, to jobbers	7.50
Zinc, 100-lb. base	9.50

Tubes and Pipes

High yellow brass	17.00
Seamless copper	17.25

Rods

High yellow brass	13.00
Copper, hot rolled	13.25

Anodes

Copper untrimmed	13.75

Wire

Yellow brass (high)	15.00

Old Metals

Deal, buying prices, cents lb.

No. 1 Composition Red Brass	
New York	4.37½-4.62½
Chicago	4.00- 4.25
Cleveland	4.75- 5.00
St. Louis	4.25- 4.50
Heavy Copper and Wire	
New York	6.00- 6.25
Chicago, No. 1	5.75- 6.00
*Cleveland	5.50- 5.75
St. Louis	5.50- 5.75
Composition Brass Borings	
New York	4.12½-4.37½
Light Copper	
New York	4.62½-4.87½
Chicago	4.50- 4.75
Cleveland	4.75- 5.00
St. Louis	4.50- 4.75
Light Brass	
Chicago	2.12½-2.37½
*Cleveland	2.50- 2.75
Lead	
New York	2.87½-3.12½
*Cleveland	2.75- 2.85
Chicago	2.75- 3.00
St. Louis	2.85- 3.00
Zinc	
New York	2.00- 2.25
Cleveland	2.00- 2.25
St. Louis	2.25- 2.50
Aluminum	
Clips, soft, Cleve.	12.00-12.50
Borings, Cleveland	6.00- 6.25
*Mixed, cast, Cleve.	9.50-10.00
Mixed cast, St. L.	9.00-10.00

Secondary Metals

Brass ingot, 85-5-5-5	8.75
Stand. No. 12 Alum.	14.00

Iron and Steel Scrap Prices

Corrected to Friday night. Gross tons delivered to consumers, except where otherwise stated

HEAVY MELTING STEEL	□
Birmingham	9.00-10.00
Boston, dealers	5.25- 5.50
Buffalo, No. 1	9.50-10.50
Buffalo, No. 2	8.50- 9.00
Chicago, No. 1	9.00- 9.50
Cleveland, No. 1	8.50- 9.00
Cleveland, No. 2	8.00- 8.50
Detroit, No. 1	7.75- 8.25
Detroit, No. 2	6.75- 7.25
Eastern Pa.	10.00
Eastern Pa., No. 2	8.00- 9.00
Federal, Ill.	7.25- 7.50
Granite City, R. R.	7.25- 7.75
Granite City, No. 2	6.25- 6.75
N. Y., deal. R. R.	7.00- 8.00
N. Y., deal. No. 2	5.50- 6.50
Pittsburgh, No. 1	11.00-11.50
St. Louis	6.50- 7.00
Valleys, No. 1	10.50-11.00
COMPRESSED SHEETS	□
Buffalo, dealers	8.50- 9.00
Chicago, factory	8.00- 8.50
Cleveland	8.00- 8.50
Detroit	7.75- 8.25
E. Pa., new mat.	9.50-10.00
Pittsburgh	10.75-11.25
St. Louis	5.00- 5.50
Valleys	10.00-10.50
BUNDLED SHEETS	□ □
Buffalo	6.50- 7.00
Cincinnati, del.	6.00- 6.50
Cleveland	6.50- 7.00
Pittsburgh	9.25- 9.75
St. Louis	4.00- 4.25
SHEET CLIPPINGS LOOSE	□
Chicago	4.25- 4.75
Cincinnati	4.50- 5.00
Detroit	4.50- 5.00
St. Louis	3.75- 4.25
STEEL RAILS, SHORT	□
Birmingham	10.50-11.00
Buffalo	12.00-12.50
Chicago (3 ft.)	10.00-10.50
Chicago (2 ft.)	10.50-11.00
Cincinnati, del.	10.00-10.50
Detroit	10.00-10.50
Pitts., open-hearth, 3 ft. and less	14.00-14.50
St. Louis, 2 ft.& less	9.50-10.00
STEEL RAILS, SCRAP	□
Boston	5.25- 5.50
Chicago	9.00- 9.50
Pittsburgh	11.00-11.50
STOVE PLATE	□ □
Birmingham	6.50- 7.00
Boston, dealers	3.25- 3.75
Buffalo	8.50- 9.00
Chicago, net	6.00- 6.50
Cincinnati, dealers	5.00- 5.50
Detroit, net	6.00- 6.50
Eastern Pa.	8.50
N. Y., deal, fdry.	6.00
St. Louis	6.00- 6.50
COUPLERS, SPRINGS	
Buffalo	12.00-12.50
Chicago, springs	9.75-10.25
Eastern Pa.	13.00-13.50
Pittsburgh	13.25-13.75
St. Louis	8.50- 9.00

ANGLE BARS—STEEL	□
Chicago	9.75-10.25
St. Louis	7.75- 8.25
RAILROAD SPECIALTIES	
Chicago	9.75-10.25
LOW PHOSPHORUS	□ □
Buffalo, billets and bloom crops	11.50-12.00
Cleveland, billet, bloom crops	13.00-13.50
Eastern Pa. crops	14.00-14.50
Pittsburgh, billet, bloom crops	14.00-14.50
Pittsburgh, sheet bar crops	13.00-13.50
FROGS, SWITCHES	□ □
Chicago	9.00- 9.50
St. Louis, cut	8.00- 8.50
SHOVELING STEEL	□ □
Chicago	9.00- 9.50
Federal, Ill.	6.75- 7.00
Granite City, Ill.	6.75- 7.00
RAILROAD WROUGHT	□
Birmingham	7.00- 7.50
Boston, dealers	6.00- 6.50
Buffalo, No. 1	7.50- 8.00
Buffalo, No. 2	10.00-10.50
Chicago, No. 1 net	7.75- 8.25
Chicago, No. 2	9.00- 9.50
Cincinnati, No. 2	7.00- 7.50
Eastern Pa.	10.00
N. Y., No. 1 deal	7.00- 7.50
St. Louis, No. 1	6.50- 7.00
St. Louis, No. 2	7.50- 7.75
SPECIFICATION PIPE	□
Boston	3.50- 4.00
Eastern Pa.	9.00
New York, dealers	3.50- 3.75
BUSHELING	□ □
Buffalo, No. 1	8.50- 9.00
Chicago, No. 1	8.25- 8.75
Cinci., No. 1 deal	5.50- 6.00
Cincinnati, No. 2	3.50- 4.00
Cleveland, No. 2	6.75- 7.00
Detroit, No. 1 new	6.75- 7.25
Valleys, new No. 1	10.00-10.50
MACHINE TURNINGS	□
Birmingham	4.50- 5.00
Boston, dealers	1.75- 2.00
Buffalo	4.00- 4.50
Chicago	5.00- 5.50
Cincinnati, dealers	4.00- 4.50
Cleveland	6.00- 6.50
Detroit	4.50- 5.00
Eastern Pa.	5.50- 6.00
New York, dealers	2.00- 2.50
Pittsburgh	8.00- 8.50
St. Louis	4.00- 4.50
Valleys	7.00- 7.50
BORINGS AND TURNINGS	□
For Blast Furnace Use	
Boston, dealers	3.25- 3.50
Buffalo	5.50- 6.00
Cincinnati, dealers	4.00- 4.50
Cleveland	6.75- 7.25
Detroit	5.50- 6.00
Eastern Pa.	5.00- 5.50
New York, dealers	1.50- 1.75
Pittsburgh	7.00- 7.50
CAST IRON BORINGS	□
Birmingham, plain	4.50- 5.00
Boston, chemical	8.50- 9.00
Boston, dealers	3.25- 3.50
Buffalo	5.50- 6.00
Chicago	5.25- 5.75
Cincinnati, dealers	4.00- 4.50
Cleveland	6.75- 7.25
Detroit	5.50- 6.00
E. Pa., chemical	12.00-13.00
New York, dealers	1.50- 1.75
Pittsburgh	7.00- 7.50
St. Louis	4.00- 4.25
PIPE AND FLUES	□ □
Cincinnati, dealers	4.00- 4.50
RAILROAD GRATE BARS	□
Buffalo	6.50- 7.00
Chicago, net	6.75- 7.25
Cincinnati	4.00- 4.50
Eastern Pa.	8.00- 8.50
New York, dealers	5.00- 5.50
St. Louis	4.00- 4.50
FORGE FLASHINGS	□ □
Boston, dealers	4.00- 4.25
Buffalo	8.50- 9.00
Cleveland	8.50- 9.00
Detroit	6.25- 6.75
FORGE SCRAP	□ □
Boston, dealers	4.00
Chicago, heavy	9.75-10.25
Eastern Pa.	9.25- 9.50
ARCH BARS, TRANSOMS	□
St. Louis	10.00-10.50
AXLE TURNINGS	□ □
Boston, dealers	4.00- 4.50
Buffalo	7.00- 7.50
Chicago, elec. fur.	8.50- 9.00
Cleveland	6.00- 6.50
Eastern Pa.	9.50-10.00
St. Louis	6.00- 6.25
STEEL CAR AXLES	□ □
Birmingham	10.00-10.50
Boston, ship, point	9.00- 9.50
Buffalo	12.00-12.50
Chicago, net	10.50-11.00
Eastern Pa.	14.00-15.00
St. Louis	10.00-10.50
SHAFTING	□ □
Boston, ship point	10.50-10.75
Eastern Pa.	15.00-15.50
New York, dealers	10.75-11.25
St. Louis	11.00-11.50
CAR WHEELS	□ □
Birmingham, iron	8.50- 9.00
Boston, iron deal	5.75- 6.00
Buffalo, iron	11.00-11.50
Buffalo, steel	13.00-13.50
Chicago, iron	9.75-10.25

Chicago, rolled steel	9.75-10.25
Cincinnati, iron	7.50- 8.00
Eastern Pa., iron	11.00-11.50
Eastern Pa., steel	13.00-13.50
Pittsburgh, iron	10.00-10.50
Pittsburgh, steel	13.25-13.75
St. Louis, iron	7.50- 8.00
St. Louis, steel	8.75- 9.25
NO. 1 CAST SCRAP	□ □
Birmingham	9.00- 9.50
Boston, No. 2	6.00
Boston, tex. con.	9.50-10.00
Buffalo, cupola	9.50-10.00
Buffalo, mach.	10.00-10.50
Chicago, agri. net	7.25- 7.75
Chicago, mach. net	8.50- 9.00
Chi., railroad net	8.00- 8.50
Cinci., mach. cup	8.50- 9.00
Cleveland, cupola	10.75-11.25
Detroit, net	8.50- 9.00
Eastern Pa., cupola	11.00-12.00
Pittsburgh, cupola	12.00-12.50
San Francisco, del.	13.50-14.00
Seattle	7.00- 8.50
St. Louis, No. 1	7.00- 7.50
St. L., No. 1 mach.	8.50- 9.00
HEAVY CAST	□ □
Boston, del.	4.75- 5.00
Buffalo, break.	7.75- 8.25
Cleveland, break.	7.50- 8.00
Detroit, break.	6.50- 7.00
Detroit, auto net	9.00- 9.50
Eastern Pa.	10.50
N. Y., No. 1, deal	6.25- 6.50
N. Y., break. deal	6.50- 6.75
Pittsburgh	10.00-10.50
MALLEABLE	□ □
Boston, consum.	11.50-11.75
Buffalo	10.50-11.00
Chicago, R. R.	9.25- 9.75
Cincinnati, agri. del.	7.50- 8.00
Chicago, R. R.	9.25- 9.75
Cleveland, rail	11.00-11.50
Detroit, auto	8.50- 9.00
St. Louis, R. R.	8.25- 8.75
Eastern Pa., R. R.	11.50-12.00
RAILS FOR ROLLING	□
5 feet and over	
Birmingham	9.50-10.50
Boston, dealers	7.00- 7.25
Buffalo	12.00-12.50
Chicago	10.25-10.75
Eastern Pa.	12.00-12.50
New York, dealer	7.50- 8.00
St. Louis	9.00- 9.50
LOCOMOTIVE TIRES	□
Chicago (cut)	9.75-10.25
St. Louis, No. 1	9.50- 10.00
LOW PHOS. PUNCHINGS	□
Buffalo	13.75-14.25
Chicago	10.25-10.75
Eastern Pa.	14.50-15.00
Pittsburgh	13.00-13.50

Nonferrous Metal Prices of the Week

Spot unless otherwise specified. Cents per pound

	Copper: Electro., del. Conn.	Copper: Lake, del. Midwest	Copper: Casting, refinery	Straits Tin New York: Spot	Straits Tin New York: Futures	Lead N. Y.	Lead East St. L.	Zinc St. L.	Aluminum 98-99%	Antimony Spot, N. Y.	Ingot Nickel
Aug. 11	9.00	9.12½	8.75	52.25	52.32½	3.75	3.60	4.30	*22.90	8.50	36.00
Aug. 13	9.00	9.12½	8.75	53.00	53.07½	3.75	3.60	4.30	*22.90	8.75	36.00
Aug. 14	9.00	9.12½	8.75	52.75	52.82½	3.75	3.60	4.30	*22.90	8.75	36.00
Aug. 15	9.00	9.12½	8.75	52.30	52.35	3.75	3.60	4.30	*22.90	8.75	36.00
Aug. 16	9.00	9.12½	8.75	52.15	52.20	3.75	3.60	4.30	*22.90	8.75	36.00
Aug. 17	9.00	9.12½	8.75	52.35	52.40	3.75	3.60	4.30	*22.90	8.75	36.00

*Nominal range 19.00c to 22.90c.

Warehouse Iron and Steel Prices

Cents per pound for delivery within metropolitan districts of cities specified

STEEL BARS	
Baltimore*....	2.90c
Boston††	2.95c
Buffalo	2.95c
Chattanooga..	3.31c
Chicago	2.95c
Cincinnati	3.15c
Cleveland	2.95c
Detroit	3.03½c
Houston	3.00c
Los Angeles..	3.70c
New Orleans	3.30c
New York‡(d)	3.22c
Pittsburgh(h)	2.90c
Philadelphia*	2.90c
San Francisco	3.60c
Seattle	3.60c
St. Louis	3.19c
St. Paul	3.00c
Tulsa	3.25c

IRON BARS	
Portland	3.40c
Chattanooga..	3.31c
Baltimore*....	3.00c
Chicago	2.75c
Cincinnati	3.15c
New York‡(d)	3.32c
Philadelphia*	2.90c
St. Louis	3.19c
Tulsa	3.25c

REINFORC. BARS	
Buffalo	1.95c
Chattanooga..	3.31c
Chicago 2.10c-2.60c	
Cleveland (c)	1.97½c
Cincinnati	3.25c
Houston	3.25c
Los Ang., cl...	2.15c
New Orleans	3.50c
Pitts., plain(h)	3.05c
Pitts., twisted squares (h)	3.175c
San Francisco	2.45c
Seattle	3.50c
St. Louis	3.24c
Tulsa	3.25c
Young. 2.30c-2.60c	

SHAPES	
Baltimore* ..	3.90c
Boston††	3.17c
Buffalo	3.20c
Chattanooga..	3.56c
Chicago	3.20c
Cincinnati	3.40c
Cleveland	3.31c
Detroit	3.40c
Houston	3.00c
Los Angeles..	3.70c
New Orleans	3.55c
New York(d)	3.37c
Philadelphia*	2.95c
Pittsburgh(h)	3.15c
Portland	3.55c
San Francisco	3.55c
Seattle	3.55c
St. Louis	3.44c
St. Paul	3.25c
Tulsa	3.50c

PLATES	
Baltimore*....	2.90c
Boston††	3.18c
Buffalo	3.20c
Chattanooga..	3.56c
Chicago	3.20c
Cincinnati	3.40c
Cleveland, ¼-in. and over	3.31c
Detroit	3.40c
Detroit, ⅜-in.	3.65c
Houston	3.00c
Los Angeles..	3.70c
New Orleans	3.55c
New York(d)..	3.40c
Philadelphia*	2.95c
Phila. floor....	4.95c
Pittsburgh(h)	3.15c
Portland	3.55c
San Francisco	3.55c
Seattle	3.55c
St. Louis	3.44c
St. Paul	3.25c
Tulsa	3.50c

NO. 10 BLUE	
Baltimore*....	3.05c
Boston††	3.25c
Buffalo	3.10c
Chattanooga..	3.36c
Chicago	3.00c
Cincinnati	3.20c
Cleveland	3.11c
Det., 8-10 ga.	3.13½c
Houston	3.35c
Los Angeles..	3.80c
New Orleans	3.55c
New York.....	3.27c
Portland	3.75c
Philadelphia*	3.05c
Pittsburgh(h)	2.95c
San Francisco	3.75c
Seattle	3.75c
St. Louis	3.29c
St. Paul	3.45c
Tulsa	3.70c

NO. 24 BLACK	
Baltimore*†..	3.51c
Boston (g)....	3.95c
Buffalo	3.25c
Chattanooga..	4.21c
Chicago	3.85c
Cincinnati	4.05c
Cleveland	3.91c
Detroit	3.93½c
Los Angeles..	4.45c
New York.....	3.85c
Philadelphia*†	3.55c
Pittsburgh**..	3.55c
Portland	4.40c
San Francisco	4.40c
Seattle	4.40c
St. Louis	4.09c
St. Paul	3.695c
Tulsa	4.75c

NO. 24 GAL. SHEETS	
Baltimore *†..	4.21c
Buffalo	4.00c
Boston (g)....	4.55c
Chattanooga..	4.86c
Chicago (h)..	4.55c
Cincinnati	4.70c
Cleveland	4.61c
Detroit	4.70c
Houston	4.40c
Los Angeles..	5.05c
New Orleans	4.95c
New York.....	4.50c
Philadelphia*†	4.25c
Pitts.** (h)	4.15-4.45c
Portland	5.00c
San Francisco	5.00c
Seattle	5.00c
St. Louis	4.79c
St. Paul	4.19c
Tulsa	5.10c

BANDS	
Baltimore*....	3.15c
Boston††	3.25c
Buffalo	3.30c
Chattanooga..	3.61c
Chicago	3.30c
Cincinnati	3.45c
Cleveland	3.36c
Detroit, ⅜-in. and lighter	3.38½c
Houston	3.25c
Los Angeles..	3.90c
New Orleans	3.95c
New York(d)	3.62c
Philadelphia..	3.15c
Pittsburgh(h)	3.70c
Portland	3.90c
San Francisco	4.05c
Seattle	3.90c
St. Louis	3.54c
St. Paul	3.20c
Tulsa	3.45c

HOOPS	
Baltimore	2.80c
Boston	4.25c
Buffalo	3.55c
Chicago	3.30c
Cincinnati	3.45c
Det., No. 14 and lighter	3.38½c
New York	3.62c
Philadelphia..	3.40c
Pittsburgh(h)	3.70c
Seattle	5.60c
St. Paul	3.75c

COLD FIN. STEEL	
Baltimore(c)	3.71c
Boston 4.00c-4.50c	
Buffalo (h)....	3.55c
Chattanooga*	4.06c
Chicago (h)..	3.50c
Cincinnati	3.70c
Cleveland(h)	3.50c
Detroit	3.63½c
Los Ang.(f)(d)	4.95c
New Orleans	4.30c
New York...3.92c-4.42c	
Philadelphia..	3.73c
Pittsburgh(h)	3.45c
Portland (f)..	4.75c
San Fran.(f)(d)	5.95c
Seattle(f)(d)	4.75c
St. Paul	3.20c
St. Louis	3.74c
Tulsa	4.65c

COLD ROLL. STRIP	
Boston, 0.100-in., 500 lb. lots	5.35c
Buffalo	5.25c
Chicago	3.27c
Cincinnati(b)	3.42c
Cleveland (b)	3.20c
Detroit	3.33c
New York	4.70c
St. Louis	3.56c

(b) Plus straightening, cutting and quantoty differentials.
(c) Plus mill, size and quantity extras.
(d) Minus quant. diff.
(e) New mill classif.
(f) Rounds only.
(g) 50 bundles or over.
(h) Outside delivery, 10c less.

‡Domestic bars.
*Plus quan. extras.
**Under 25 bundles.
*†50 or more bundles.
†New extras apply.
††Base 40,000 lbs. extras on less.

Prices at Detroit, Cleveland, Chicago, Pittsburgh, Cincinnati, Chattanooga, New York, Boston, St. Louis on heavier lines are subject to new quantity differentials:

399 pounds and less, up 50 cents; 400 to 9999 pounds, base; 10,000 to 19,999 pounds, 15 cents under; 20,000 to 39,999 pounds, 25 cents under; 40,000 pounds and over, 35 cents under base.

Current Iron and Steel Prices of Europe

Dollars at Rates of Exchange, Aug. 16

Export Prices f. o. b. Ship at Port of Dispatch—By Cable (or Radio)

	British gross tons U. K. ports £ s d		Continental Channel or North Sea ports, metric tons Gold parity, $4.8665 £ s d		£ s d
PIG IRON					
Foundry, 2.50-3.00 Silicon.	$15.27	3 0 0	$8.04		1 13 0
Basic bessemer.....	13.74	2 14 0*	7.30		1 10 0
Hematite, Phos. .03-.05....	15.40	3 0 6	....		.....
SEMIFINISHED STEEL					
Billets.....	$28.00	5 10 0	$11.44		2 7 0
Wire rods, No. 5 gage.....	39.70	7 16 0	21.90		4 10 0
FINISHED STEEL					
Standard rails.....	$39.45	7 15 0	$26.77		5 10 0
Merchant bars.....	1.70c	7 10 0	.69c to .72c		3 2 6 to 3 5 0
Structural shapes.....	1.67c	7 7 6	.68c		3 1 6
Plates, †¼ in. or 5 mm.....	1.82c	8 0 0	.91c		4 2 6
Sheets, black, 24 gage or 0.5 mm.....	2.10c	9 5 0	1.13c to 1.16c		5 2 6 to 5 5 0
Sheets, gal., 24 gage, corr...	2.55c	11 5 0	1.43c		6 10 0
Bands and strips.....	1.87c	8 5 0	.88c		4 0 0
Plain wire, base.....	2.10c	9 5 0	1.18c		5 7 6
Galvanized wire, base.....	2.55c	11 5 0	1.38c to 1.40c		6 5 6 to 6 7 6
Wire nails, base.....	2.72c	12 0 0	1.27c		5 15 0
Tin plate, box 108 lbs.....	$ 4.58	0 18 0	.....		.....

British ferromanganese $85 delivered Atlantic seaboard, duty-paid. German ferromanganese £9 0s 0d $(43.74) f.o.b.

Domestic Prices at Works or Furnace—Last Reported

	£ s d		French Francs		Belgian Francs		Reich Marks
Fdy. pig. iron, Si. 2.5.....	$17.18	3 7 6(a)	$13.99	210	$14.73	310	$24.92	63
Basic bessemer pig iron....	16.54	3 5 0(a)	*12.32	185	13.78	290	27.49 (b)	69.50
Furnace coke.....	4.45	0 17 6	7.99	120	5.23	110	7.52	19
Billets.....	28.00	5 10 0	28.64	430	20.90	440	38.18	96.50
Standard rails.....	1.87c	8 5 0	2.10c	700	2.42c	1,100	2.36c	132
Merchant bars.....	1.95c	8 12 0	1.68c	560	1.21c	550	1.97c	110
Structural shapes.....	1.99c	8 15 0	1.65c	550	1.21c	550	1.92c	107.50
Plates, †¼-in. or 5 mm.....	1.92c	8 8 9	2.10c	700	1.54c	700	2.27c	127
Sheets, black.....	2.38c	10 10 0§	2.55c	850‡	1.71c	775‡	2.58c	144‡
Sheets, galv., corr., 24 ga. or 0.5 mm.....	2.95c	13 0 0	4.50c	1,500	3.30c	1,500	6.62c	370
Plain wire.....	2.10c	9 5 0	3.39c	1,130	2.42c	1,100	3.10c	173
Bands and strips.....	2.12c	9 7 0	1.95c	650	1.54c	700	2.27c	127

*Basic. †British ship-plates. Continental, bridge plates. §24 ga. ‡1 to 3 mm. basic price. British quotations are for basic open-hearth steel. Continental usually for basic-bessemer steel. a del. Middlesbrough. b Since January.

Bars

Bar Prices, Page 50

Pittsburgh — Slack demand for merchant steel bars forced suspension of several district producing plants last week. Nonintegrated finishers of cold-drawn bars, the automotive trade and railroad car shops, have practically ceased forward buying. The merchant steel bar market is steady at an unchanged 1.80c base, Pittsburgh, but without significant test.

Cleveland—Steel bar specifications here so far this month total 50 per cent more in tonnage than in the comparable period in July, the low point of the year. The volume, however is considerably below district sales offices' quotas for August, and owing to widespread labor difficulties and uncertainties with respect to government policies there appears to be less confidence now in a vigorous fall upturn. Makers are booking only miscellaneous, fill-in orders. Consumption in many leading classifications has fallen off. The drop in automobile manufacturers' requirements is less pronounced than in other lines, and some revival in buying by them is expected in September.

Chicago — Steel bar demand is fairly steady, with occasional gains noted in sales and specifications. Better buying is in prospect from the automotive industry and some miscellaneous consumers in view of reduction in stocks since July 1.

Boston—Slower operation by manufacturing consumers of commercial steel, alloy and forging bars has precluded improvement in buying. Price for commercial steel bars is 2.20c, Boston.

New York—Bolt and nut manufacturers are specifying lightly and with little from railroads, the situation in commercial steel bars remains listless. Bars are 1.80c, Pittsburgh, or 2.13c, New York.

Philadelphia — Consumers' stocks of commercial steel bars are being slowly reduced, as fabrication has held at a better rate than specifications, which have been about as light as at any time this year. Steel bars are unchanged at 2.09c, Philadelphia, and common iron bars at 1.89c to 1.94c, Philadelphia.

Washington—Bids will be taken Aug. 28 by the bureau of supplies and accounts, navy department, for a quantity of bar steel in various sizes for delivery to several navy yards.

Louisiana Supply Co. is the name adopted by the former Union Supply Co., Sulphur, La., jobber of oilfield and industrial equipment. W. W. Lewis is president and purchasing agent.

Plates

Plate Prices, Page 50

New York—Bids were opened last week on 12 naval vessels to be built in private yards, and it appears from investigation that steelmakers submitted to the shipbuilders their full code prices. This was not considered a real test of the President's recent proclamation permitting a reduction of 15 per cent in code prices in bids to the government. This test is expected shortly when bids are taken direct by the government on material for 12 additional naval vessels to be built in navy yards. The vessels, including 12 destroyers, six submarines, three light cruisers, one heavy cruiser, and two heavy destroyers will require approximately 40,000 tons steel, 75 per cent plates.

Federal Shipbuilding & Drydock Co., Kearny, N. J., probaly will be awarded one heavy cruiser and two heavy destroyers, while the Electric Boat Co., Groton, Conn., low on three submarines. United Drydock Co., New York, appears to be in line for certain of the light destroyers. The only other eastern yard likely to share in this program is Newport News Shipbuilding & Dry Dock Co., Newport News, Va., which is low on the light cruiser. Incidentally, western coast yards will share in the construction of five light destroyers.

In recent bids to the navy under specification 48S5E steelmakers quoted an increase of 25 cents in the extras on medium plate material.

Possibly 1000 tons or more of high grade plates will be required for boilers, superheaters and similar equipment for naval vessels, bids to be Aug. 20. Tanks for fuel oil heater installations are making heavier demands, a seasonal development.

Pittsburgh — Virtual absence of steel plate work finds tank shops and river barge builders with poor schedules. Tankmakers have before them an inquiry from the Renner Brewing Co., Youngstown, O., for twenty 8 x 31-foot tanks, requiring about 100 tons of plates. Pittsburgh federal engineers closed bids late last week on 150 steel buckle plates for dam repairs in the Ohio river. The 1.80c, Pittsburgh, base on plates is steady.

Cleveland—A slight improvement was noted during the week in the number of miscellaneous orders for plates, enabling the Cleveland mill to continue operating on a part time basis. Boiler manufacturers and machinery builders are taking some material, while tank builders are out of the market.

Chicago — Fairly large plate tonnages are involved in pending federal work, including penstocks for Pacific coast and Mississippi river dams. Recent awards of tanks and other plate projects, however, have been light.

Boston — Award of four 55,000-barrel oil tanks, requiring close to 800 tons of plates, features an otherwise dull plate demand. A few boiler shops are more active with indications of further improvement, but buying is largely in small spot lots. Plates are 2.20c, delivered, Boston. The Holyoke, Mass., fabricator is active on recent orders.

Philadelphia—Plate operations in this district are about on a parity with a week ago, with most sellers producing more raw steel than they are consuming. Some report slightly better bookings; others report less. Railroad tonnage is slack with no action by the Baldwin Locomotive Works on the 400 tons of plates required for the five locomotives for the Seaboard Air Line and the five for the Boston & Maine. A mill in this district has booked 215 tons for the Panama canal commission. The market is 1.90c, Coatesville, Pa., or 1.98½c, delivered, Philadelphia.

Contracts Placed

1800 tons, Rundell Memorial library, Rochester, N. Y., to F. L. Heughes & Co. Inc., Rochester; through Hunkin-Conkey Construction Co., Cleveland. Tentative award in July now officially confirmed.

920 tons, Hartol Products Co., Boston, four 55,000-barrel tanks at Boston, and one 25,000-barrel tank at Syracuse, N. Y., to Chicago Bridge & Iron Works, Chicago.

300 tons, tanks for First National Oil Co., Long Island City, N. Y.; to Gifford-Wood Co., Hudson, N. Y.; plates to Otis Steel Co., Cleveland.

215 tons, Panama canal commission, Washington, to Worth Steel Co., Claymont, Del.

200 tons, shapes and bars, courthouse and jail, Pottawatomie county, Oklahoma, to Capital Steel & Iron Co., Oklahoma City; W. R. Grimshaw Co., Tulsa, Okla., general contractor.

135 tons, bridge to carry tracks of Pennsylvania, Reading and Seashore railroads across route 48, section 27, Pleasantville, N. J., to American Bridge Co., Pittsburgh; Versaggi Bros. Construction Co., Wildwood, N. J., general contractors.

100 tons, estimated, including equipment, incinerator, Annapolis, Md., to Pittsburgh-Des Moines Steel Co., Pittsburgh.

Unstated tonnage, standpipe, 25 feet diameter, 100 feet high, Paxton, Mass.,

to Pittsburgh-Des Moines Steel Co., Pittsburgh, $9980.

Contracts Pending

290 tons, 22-inch welded pipe, metropolitan water district, Los Angeles; bids opened.

100 tons, twenty 8 x 31-foot storage tanks for Renner Brewing Co., Youngstown, O.

Unstated, 60 and 72-inch welded steel penstock, for Pine View, Utah, dam; bids Sept. 4 to bureau of reclamation, Denver.

Sheets

Sheet Prices, Page 50

Pittsburgh — The sheet market still shows a declining trend, with orders the past week smaller in size and less frequent than two weeks ago. No particular feature is evident in demand, nor is the outlook encouraging for such sheet mill products as galvanized and black sheets where farm buying power has been so severely affected. Prices are unchanged.

Cleveland—Sheet mills here and in a nearby lake district were idle last week, though schedules were being formulated with an accumulation of miscellaneous business for rolling this week. Automobile manufacturers are specifying only small requirements to round out stocks. Some producers noted a gain in bookings during the week, best demand coming from makers of washing machine tubs.

Chicago—The slow rate of sheet buying indicates that larger consumers have not reduced their stocks sufficiently to warrant heavy replacements. Automotive interests are placing fill-in orders and with their operations continuing better than had been anticipated, some new orders are looked for within the next several weeks. Demand elsewhere continues spotty.

Boston — Sheet buying in New England is limited to small orders. Improvement is expected next month when heating, stove and oil burner business is due for a seasonal increase.

New York—Sheet tonnage continues light, although as the deadline is approached—Aug. 31—for shipments of galvanized sheets and formed roofing on agreements with jobbers more interest is being manifested in new agreements. Some producers avoid quoting jobbers, concerning whom there may be some question as to their status under the code definition, the going market, with the provision that if they have signed with another producer, they will be given the discount of $2 a ton. Others are turning to the code authority, with whom all such agreements are filed, for information. If they find that the prospective buyer had filed they quote him the discount; if not, they quote the full price. Numerous questions continue to arise in connection with the status of the jobber.

The bureau of supplies and accounts, navy department, Washington, opened bids Aug. 17 on 1100 tons of sheets.

Philadelphia — While the signing of new jobber agrements is expected to stimulate some activity between now and the end of the month, when shipments against old agreements are due to expire, sheet sellers look for a generally quiet market until September. At that time a seasonal increase in demand is anticipated from stovemakers, radio manufacturers and some improvement from autobody builders.

Cincinnati—Sheet demand is wavering, requiring about 25 per cent production. This demand is broad, chiefly for spot shipments. Renewed buying in volume is anticipated early in September.

Railroads

Track Material Prices, Page 51

Board of transportation, New York, has recommended award to Bethlehem Steel Co., Bethlehem, Pa., of 5100 tons of contact rails. This is in addition to a somewhat larger rail order for the same user recently given Bethlehem.

Baltimore & Ohio is reopening several car and locomotive repair departments after a long shutdown, to complete PWA repair programs. About 1800 men will be added to shop forces. Equipment repair work otherwise is slack in the East. Programs this year have not been up to trade expectations, due, it is said, to mounting costs. One eastern railroad, having borrowed government funds, found itself able to finish only 80 per cent of the originally-planned program.

Chicago Surface Lines has awarded one streamlined, noiseless street car to the Pullman Car & Mfg. Corp., Chicago. Several western roads are said to be planning addition of streamlined trains to their equipment but are not ready to make announcements. Bids have been received by the Illinois Central on 11 diesel locomotives which probably will be awarded this month.

The Pennsylvania has practically completed releases on its 100,000 tons of rails and the small remainder, as well as other tonnages, will be delivered by Aug. 31.

Strip Steel

Strip Prices, Page 51

Pittsburgh — Light demand still prevails for hot and cold-rolled strip steel. However, a slightly better trend is evident over the first 15 days of August when some makers have shipped as much as they did in the entire month of July. The base prices of 1.85c, Pittsburgh, on hot-rolled strip steel and 2.60c, Pittsburgh or Cleveland, for cold-rolled strip, hold unchanged. Quotation of 1.80c, Pittsburgh, on hot-rolled last week was a typographical error.

Cleveland—Strip mills in this district were down last week but expected to roll some material this week. Volume of new business is at the lowest point of the year. Automobile manufacturers are rapidly reducing inventories, but new purchasing of substantial tonnage is not anticipated from them until September. A few orders were placed by makers of building hardware, in response to an apparently better demand for building renovation, and by fabricators of rail highway guards who are selling in larger volume.

Boston — One or two cold strip producers note a slight, but spotty, improvement in orders, but the gain is not general. Most buying is of narrower widths. Hot strip is moving slowly. Cold-rolled is 2.80c, Worcester, Mass.

Philadelphia — With consumers' stocks being slowly absorbed, strip producers are hesitant in predicting how soon an improvement will set in. It is the general expectation, however, that next month will show a gain in specifications, due to seasonal influences, if for no other reason. Hot strip is 1.85c, Pittsburgh, or 2.14c, Philadelphia, and cold strip 2.60c, Pittsburgh, or 2.89c, Philadelphia.

Coke By-Products

Coke By-Product Prices, Page 51

New York—Contracting for sulphate of ammonia is active following announcement of next season's price at $24 f.o.b. cars, Atlantic port, a reduction of $1 a ton. Demand for distillates is unchanged, with prices firm. Output is light and little spot material is available. Naphthalene and phenol are unchanged.

Shapes

Structural Shape Prices, Page 50

Pittsburgh—An expected inquiry for approximately 50,000 tons of structural shapes for five Allegheny county (Pittsburgh) bridges may not materialize, according to information from Washington, which indicated the federal government might refuse to grant the approved loan of $24,500,000 to Allegheny county unless local political details were settled. For the time being small jobs predominate in the structural market. Prices are unchnaged on the basis of 1.80c, Pittsburgh, for plain material, and 2.15c, Pittsburgh, for steel sheet piling.

Cleveland—Architects and engineers in this district have few projects on their boards, the total not exceeding 2000 tons. Some of the railroads are contemplating bridge repairs later in the year. The state is expected to issue specifications in September for the Lorain avenue, Cuyahoga county (Cleveland) bridge over Rocky river which is estimated to require about 2000 tons. Five other state bridges on which bids were taken last week take a total of 400 tons of shapes. Bids also went in on 800 tons for a Y. M. C. A. building, Toledo, O.

Chicago—Structural awards are limited to several hundred tons while inquiries also are small in the aggregate. A viaduct for the Union Pacific railroad at Omaha, Nebr., will take 1500 tons, while several small state bridges in Illinois involve 800 tons.

Boston—A fair number of small bridge projects are up, including repair work on the Northern avenue bridge, Boston, taking about 350 tons. Building work is largely for hospitals and other public construction.

Philadelphia—Bridge work continues to be the principal sustaining factor in structural activity. The largest single job, the 5000-ton state viaduct at Baltimore has been placed with the American Bridge Co., Pittsburgh, through the George A. Fuller Co., Washington, general contractor. Steel for the proposed Chevrolet plant in Baltimore has not been fully estimated. Shapes are 1.90c, Bethlehem, or 2.00½c, Philadelphia.

New York—Structural awards are light, and few new projects are up for figures. Fabricated prices are irregular.

Shape Awards Compared

	Tons
Week ended Aug. 18	12,692
Week ended Aug. 11	23,882
Week ended Aug. 4	16,134
This week in 1933	9,296
Weekly average for 1933	14,838
Weekly average, 1934	17,378
Weekly average, July	18,609
Total to date, 1933	498,955
Total to date, 1934	590,861

Shape Contracts Placed

5000 tons, state viaduct, Baltimore, to American Bridge Co., Pittsburgh; through George A. Fuller Co.

915 tons, inspection sheds, New York, to George A. Just Co., Long Island City, N. Y.

810 tons, Frankford Distilleries, Louisville, Ky., to Jones & Laughlin Steel Corp., Pittsburgh.

410 tons, machine shop, Irvine, Pa., for National Forge & Ordnance Co., to Rogers Structural Steel Co., Corry,

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Pa.

400 tons, repairs to Sixty-second street viaduct, Pittsburgh, to Pittsburgh Bridge & Iron Works, Rochester, Pa., through Farris Engineering Co., Pittsburgh.

375 tons, viaduct and bridge, Parker county, Texas, to North Texas Iron & Steel Co., Fort Worth, Tex.

350 tons, brewery addition, for Jacob Smith Brewing Co., St. Paul, to St. Paul Structural Steel Co., St. Paul.

225 tons, bridge, Jordan, Minn., to American Bridge Co., Pittsburgh.

200 tons, State street school, Los Angeles, to Minneapolis-Moline Power Implement Co., Minneapolis.

200 tons, plant addition, Independent Mfg. Co., Philadelphia, to McClintic-Marshall Corp., Bethlehem, Pa.

191 tons, bridge, Pennington, N. J., to carry route 30, section 10, across tracks of Reading railroad, to American Bridge Co., Pittsburgh.

175 tons, building addition, Taunton-New Bedford division, Revere Copper & Brass Inc., New Bedford, Mass., to McClintic-Marshall Corp., Bethlehem, Pa.

160 tons, state bridge, Bedford county, Pennsylvania, to McClintic-Marshall Corp., Bethlehem, Pa.

150 tons, state bridge, Sewell, Md., to American Bridge Co., Pittsburgh.

140 tons, state bridge, Pleasantville, N. J., to American Bridge Co., Pittsburgh.

125 tons, bridge, Williamson county, Illinois, to Vincennes Bridge Co., Vincennes, Ind.

115 tons, spans, project NRH-06, Alabama, to Ingalls Iron Works Co., Birmingham.

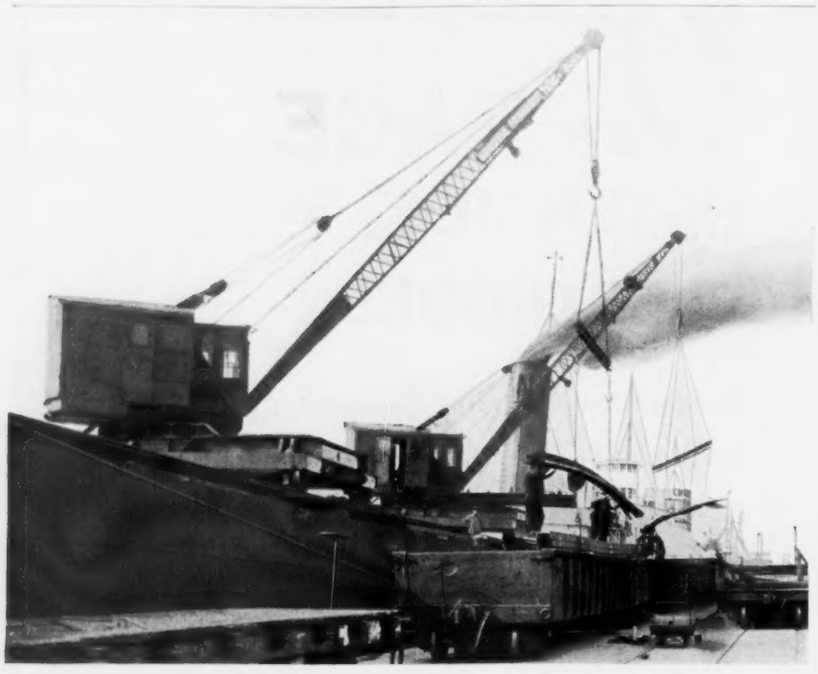
110 tons, bachelor quarters, Quantico, Va., to Dietrich Bros., Baltimore.

106 tons, state bridge in Kern county, California, to Consolidated Steel Corp., Los Angeles.

100 tons, bridge, Springdale, Ark., to J. B. Klein Iron & Foundry Co., Oklahoma City, Okla.

100 tons, shapes and bars, bridge over Baker river, Rumney, Grafton county, New Hampshire, 75 tons of shapes to Lackawanna Steel Construction Corp., Buffalo; and 25 tons of bars to Concrete Steel Co., Boston; O. W. Miller Co. Inc., Springfield, Mass., general contractor.

100 tons, plant for Hughes-Mitchell Processes, Torrance, Calif., to Consolidated Steel Corp., Los Angeles.



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Shape Contracts Pending

3500 tons, extension to building No. 163, bureau of yards and docks, Norfolk, Va.; tonnage estimate revised upward from 2500 tons first reported in STEEL, Aug. 13.

2500 tons, bridge, Lake of Ozarks, Camdenton, Mo., bids expected in September; Sverdrup & Parcel, Railway Exchange building, St. Louis, consulting engineers. Work also requires 190 tons of reinforcing bars.

1800 tons, roller gates, service bridge and emergency bulkheads, dam No. 6, Mississippi river at Fountain City, Wis.; bids to St. Paul district engineers, Sept. 18.

1300 tons, Tenth street bridge, Omaha, Nebr., for Union Pacific system, Chicago.

1000 tons, remodeling smelting plant for Nevada Consolidated Copper Co., McGill, Nev.; bids opened.

950 tons, Elmwood avenue bridge, Rochester, N. Y.; George A. Fuller Co., New York, low for general contract.

800 tons, Illinois state highway bridges; bids Aug. 28.

400 tons, state bridges in various counties of Ohio; bids to department of highways, Columbus, Aug. 10, 17 and 18.

500 tons, five New York state highway bridges.

480 tons, three state highway bridges, West Virginia; bids Aug. 21 to state highway department, Charleston, W. Va.

350 tons, repairs, Northern avenue bridge over Fort Point channel, Boston; bids Aug. 27.

270 tons, 542-foot state bridge, Yakima county, Washington; Elliott & Co., Seattle, general contractors.

250 tons, bottling plant for German Brewing Co., Cumberland, Md.

215 tons, state road work, at Salisbury, Monroe and Nashville, N. C., general contract awarded; this includes a tonnage of bars.

200 tons, state bridge, Versailles, Mo.

200 tons, state bridge, Warsaw, Mo.

200 tons, substructure, Ashland avenue bridge, Chicago; bids Aug. 30. Plans for superstructure being drawn.

190 tons, state highway bridge, Corona, Long Island, N. Y.

158 tons, 1150-foot through truss bridge,

Hillsgrove township, Sullivan county, Pennsylvania; bids to Pennsylvania state highway department Aug. 31; included 45,774 pounds of plain steel bars.

130 tons, three laboratory buildings, Harmarville, Pa., for Gulf Refining Co.; W. T. Grange Construction Co., Pittsburgh, general contractor.

100 tons, three-span bridge, Soucook river, Loudon, N. H.; Lane Construction Co., Meriden, Conn., low at $23,479.45.

100 tons, piling, Langley field, Virginia, bids Aug. 30; this is in addition to several hundred tons of plates previously noted as pending for a wind tunnel at this point.

100 tons, approximately, shapes and bars, comprised of 164,730 pounds of fabricated structural steel and 24,092 pounds of plain steel bars, 650-foot through plate girder bridge, Westfield township, Tioga county, Pennsylvania; bids to state department of highways, Harrisburg, Pa., Aug. 31.

Unstated, power house for Washington State college; bids Sept. 4 to E. O. Holland, secretary, Pullman, Wash.

Wire

Wire Prices, Page 51

Pittsburgh—Slowing in specifications by users of manufacturers' wire adds to a depressed merchant market. Nails, fencing and other rural specialties have been deeply affected by continued mid-western drouth. The market of 2.30c base, Pittsburgh or Cleveland, is firm on plain manufacturing wire, but some irregularities are current from the $2.60 base on standard wire nails.

Cleveland—The market for wire is dull, few orders being placed by nut and bolt manufacturers or automobile interests. Makers are hopeful of a fall improvement in demand from agricultural districts, pointing out that farmers this year have more money due to higher prices of products and government aid though this is offset to some extent by reduced crops in drouth areas.

Chicago—While wire sales and specifications are moderately better than a month ago, the improvement is small. Both jobbers and consumers in some instances still are well stocked.

Boston—Demand for manufacturers wire is dull, showing little improvement since the drop in buying at the beginning of July. A few specialty lines are more active, although new business in textile wires has dropped. Bright wire is steady at 2.40c, Worcester, Mass.

New York—American Steel & Wire Co. has been awarded most of 749 tons of No. 9 and No. 12 telephone wire for the forestry bureau, department of agriculture, Washington. Of 6542½ miles of both sizes, American Steel & Wire Co. was awarded 1493½ miles of No. 9 and 3689 miles of No. 12. Remainder of the wire went to John A Roebling's Sons Co., Trenton, N. J., and Pittsburgh Steel Co., Pittsburgh.

Auto Steel Co. has been established at 10401 Northlawn avenue, Detroit, by Leo H. Marks, to handle sheet steel in warehouse and mill deliveries.

Quicksilver

New York—Quicksilver is unchanged in a quiet market. Small lots are quoted up to $75.50, a virgin flask, and round lots down to $74.50 a flask.

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Reinforcing

Reinforcing Bar Prices, Page 51

Pittsburgh—Building projects requiring small lots of reinforcing steel bars are continuing active and last week government releases were granted on 60 postoffices at various locations over the country, each requiring from 10 to 15 tons of bars. After some delays over general contractor award, Gulf Refining Co. last week awarded W. T. Grange Construction Co., Pittsburgh the building of three experimental laboratories at Harmarville, Pa. This work requires about 450 tons of reinforcing steel bars and about 130 tons of structural shapes. Prices are based on 2.05c, Pittsburgh, for cut lengths.

Cleveland—Bids went into the Ohio state highway department last week on several bridges, requiring a total of 200 tons of concrete bars. Current orders are for small lots only, both in public and private work. For a building for the Fisher Body Co. of Cleveland, 70 tons are expected to be awarded this week, in addition to the 600 tons of shapes as recently noted.

Chicago—Reinforcing bar requirements are limited almost entirely to municipal and federal projects. Several small postoffices are pending in this state, the largest being for Decatur, requiring 100 tons.

Boston—Reinforcing concrete bar awards are light, but several hundred tons are active for bridges. Hospital units pending require about 200 tons.

New York—Reinforcing bar awards are slightly heavier, led by 600 tons for sewers in Brooklyn and Queens. A fair volume is pending.

Philadelphia—Public work dominates activity in reinforcing bars, with bids being opened over the latter half of this month on 500 tons of Pennsylvania state road work. New buying is confined to small scattered tonnages. Billet steel bars, cut lengths, are 2.05c, Pittsburgh, or 2.34c, Philadelphia.

Reinforcing Steel Awards

600 tons, sewers in Brooklyn and Queens (New York), to Igoe Bros., Newark, N. J., and Concrete Steel Co., New York.

137 tons, state bridge in Kern county, California, to unnamed interest.

Unstated tonnage, alterations, executive offices, White House, Washington, to Rosslyn Steel & Cement Co., Washington; N. P. Severin Co., Chicago, general contractor.

Reinforcing Steel Pending

800 tons, Orleans street viaduct, Baltimore; George A. Fuller Co., New York, general contractor.

750 tons, 60 small postoffices at various locations; specifications released.

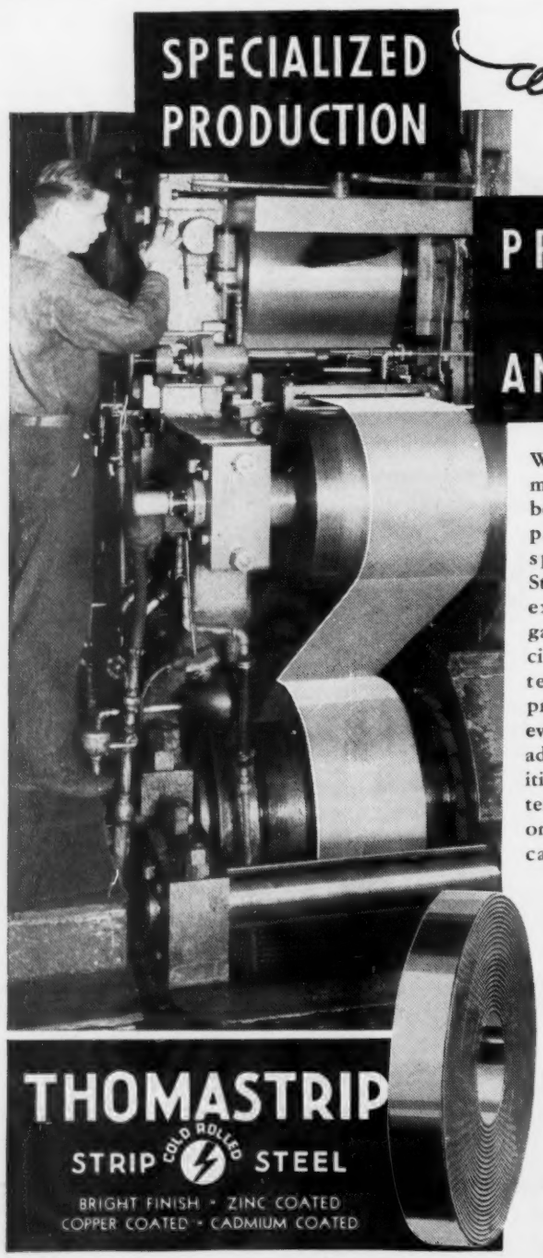
500 tons, remodeling smelting plant for Nevada Consolidated Copper Co., McGill, Nev.; bids opened.

450 tons, experimental buildings, Harmarville, Pa., for Gulf Refining Co., Pittsburgh; W. T. Grange Construction Co., Pittsburgh, general contractor.

375 tons, Los Angeles county flood con-

Concrete Awards Compared

	Tons
Week ended Aug. 18	757
Week ended Aug. 11	2,758
Week ended Aug. 4	1,639
This week in 1933	3,708
Weekly average for 1933	3,232
Weekly average, 1934	4,329
Weekly average, July	3,251
Total to date, 1933	110,369
Total to date, 1934	147,190



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trol district, Los Angeles; bids opened.
350 tons, sewer No. 10, Chicago; Commonwealth Improvement Co., Chicago, general contractor.
350 tons, concrete deck for Delaware river bridge commission, Philadelphia; to Turner Construction Co., Philadelphia, general contractor.
200 tons, state bridges in various counties of Ohio; bids to department of highways, Columbus, Aug. 10, 17 and 18.
200 tons, bridge across Mississippi river at Hannibal, Mo.; bids to be opened Aug. 22 by Sverdup & Parcel, St. Louis.
166 tons, grade school, Reading, Pa., Consolidated Engineering Co., Baltimore, low on general contracts.
155 tons, hospital buildings, Waverly, Mass.; A. Piotti Co., Boston, low.

Pipe

Pipe Prices, Page 51

Pittsburgh —Two district pipe producers, National Tube Co. and Pittsburgh Steel Co., share in an order for 2000 tons of pipe for the Standard Oil Co. of California, for 18-mile oil line in California. This order does not cancel the inquiry that the company recently issued for connecting a Pacific coast marine terminal with the San Joaquin oil fields, which line will be 108 miles long and will require approximately 14,000 tons of steel pipe. This latter order promises early award. Demand for seamless pipe is fairly good, running considerably heavier than that for butt and lap-weld sizes. Bids for cast iron pressure pipe and fittings are asked by the city unitl Aug. 21.

Chicago—New inquiries for cast pipe usually involve small lots. Chicago is taking bids on fittings for a pumping station and is expected to close shortly on about 2200 tons of pipe on which bids were taken recently.

New York—Awards of cast iron pipe comprise mainly small fill-in lots. Eastern foundry operations in most instances are at a lower level.

Cast Pipe Placed

148 tons, 4 and 6-inch, class 150, Santa Monica, Calif., to American Cast Iron Pipe Co., Birmingham, Ala.
Unstated tonnage, 1600 feet of 12-inch for river crossing main, Green Bay, Wis., to James B. Clow & Sons Co., Chicago.

Steel Pipe Placed

2000 tons, 18 miles of 12¾ to 22-inch oil line for Standard Oil Co. of California, San Francisco, 750 tons of 12¾-inch to Pittsburgh Steel Co., Pittsburgh; balance in sizes up to 22-inch to National Tube Co., Pittsburgh.
500 tons, approximately, scaffolding for cleaning and repairing Washington monument, Washington, supplied by American Tubular Elevator Co., Pittsburgh; general contract to Alexander Howie Inc., Cleveland.

Cast Pipe Pending

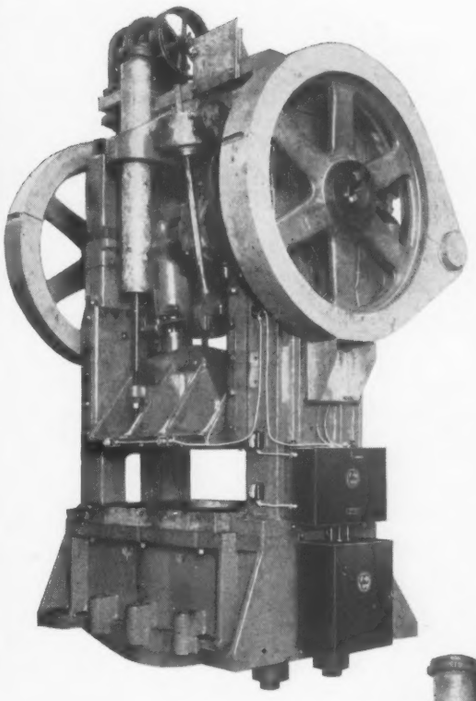
430 tons, San Clemente, Calif.; bids in.
330 tons, 8-inch and under, Randelman, N. C., also 75,000-gallon elevated tank; bids Aug. 28.
Unstated tonnage, fittings for Cermak pumping station, Chicago; bids Aug. 23.
Unstated tonnage, 2000 feet, 6 to 16-inch, Charlotte, N. C.; bids in.
Unstated tonnage, 25,675 feet, 1½, 2, 4 and 6-inch, distribution mains and sewer mains, waterworks and sewage disposal project, Springville, Ala.; bids in. John M. Gilfilian & Associates, Birmingham, Ala., consulting engineers.
Unstated tonnage, 1200 feet of 16-inch and 2300 feet of 8-inch, Milwaukee; bids soon.

Cold Finished

Cold Finished Prices, Page 51

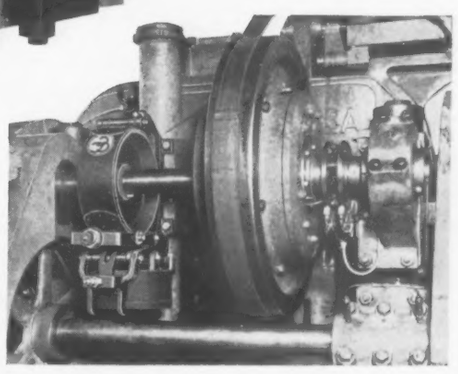
Pittsburgh — Some slight forward

New Power Press Control Insures Safety



Safety to the operator is one of the main features of the automatic electric control operation of power presses developed by Clark Controller through the use of automatic control panel and electric brake. The power unit actually running the press has no connection with this control unit.

The safety feature is the non-repeat control system of operating the press. The installation illustrated is on a Niagara press although the same unit could be applied to any similar press. Patent pending.



Above illustration is complete view of press showing the automatic control panel while view at the right shows the electric brake unit.

THE CLARK CONTROLLER CO.
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Cleveland, Ohio

buying by automobile concerns last week covers the last assemblies of 1934 models, as cold-finished bar material now being specified is for fabrication and assembly some 60 days hence. Therefore, it is expected that some improvement in cold-finished bar demand will come in September with initial buying for 1935 models. An unchanged market of 2.10c base, Pittsburgh, applies on carbon cold-finished bars and 2.95c, Pittsburgh, for alloy quality cold-finished.

Tin Plate

Tin Plate Prices, Page 50

Pittsburgh—Owing to a backing up of heavy stocks in the hands of can-makers, the rate of tin plate buying last week declined to barely support 50 per cent operations in the producing industry. Although domestic demand is slow, some fairly heavy orders from foreign sources have recently been placed with tin plate mills in the United States. On a base box basis export prices have risen recently 50 to 60 cents. The domestic market is unchanged at $5.25 per base box, Pittsburgh.

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GARAGE IN CONNECTION

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DETROIT

Pig Iron

Pig Iron Prices, Page 52

Chicago—Shipments continue slow and the movement so far this month has shown little change from the July rate. New business also is light and although foundry operations have been fairly well maintained, sufficient stocks are in the hands of larger consumers to make new buying unnecessary. Automotive foundries help to sustain the total melt while stove plants are slightly more active and some farm implement manufacturers are operating better than they were a short time ago. No. 2 foundry and malleable pig iron continue $18.50, furnace.

New York—Another dull week has prevailed in pig iron, with tonnage coming out little if any better than in July. Producers see little ahead over the remainder of this month. Prices are unchanged.

Pittsburgh—Foundry pig iron demand still is constituted in less-carload lots. Merchant furnace interests are still without appreciable backlogs, with the exception of one local pig iron interest which recently closed on an ore conversion contract for a nonintegrated valley steel mill. The market is $18.50, Neville Island, for foundry pig iron grades, bessemer $19, and basic, $18.

Philadelphia—Pig iron specifications are a shade better. No important tonnages are noted, but orders are slightly more numerous. Consumers with waterfront facilities for handling 400-ton lots and over are beneficiaries of a new code ruling on shipments from the South, under which they now, in addition to the 60-cent allowance, are to receive the 38-cent differential which has heretofore prevailed on southern foundry iron over 0.70 per cent in phosphorus for shipment into the North by rail.

Cleveland—Pig iron shipments are declining, and the volume from lake furnaces this month is expected to be less than that in July, setting a new low for the year. Demand for malleable iron from automobile foundries is off considerably. Corrigan, McKinney Steel Co., until recently operating all of its four stacks, now has only two active.

Boston—Pig iron sales are light and in small lots. Foundry melt is down, but a seasonal upturn by stove foundries is expected within a few weeks.

St. Louis—Makers of pig iron are

looking to renewed buying activity just before the turn of the quarter, and in the meantime all factors in the trade are merely marking time.

Cincinnati—Sales and shipments of pig iron continue at about the same rate as last month. Orders are for spot shipment and in small tonnages, the stocks of larger melters not yet exhausted. A seasonal lowering of the melt is noted in automobile foundries.

Birmingham, Ala.—Production has been curtailed further, one of the larger blast furnaces at Fairfield having fires banked and plans under consideration for one or more other stacks going out shortly. The Fairfield furnace was on basic iron and was one of the largest in the district.

Buffalo—The market is quiet though the demand for small tonnages appears to be fairly steady. Foundry operations are spotty, with some exceptionally busy and others inactive. Bethlehem Steel Co.'s Lackawanna plant is operating one blast furnace only.

Toronto, Ont.—General business in Canadian pig iron markets was without change for the week. While there was a slight flurry in demand for iron, sales were confined to single car lots and no large tonnage orders have been closed. Prices are unchanged and firm.

Scrap

Scrap Prices, Page 53

Pittsburgh—The market has tightened considerably since last week's reduction, which places No. 1 heavy melting steel at $11 to $11.50 per ton, delivered in the Pittsburgh district. Brokers are not willing to go short at these prices, nor are they finding much interest on the part of consumers in buying the small lots they occasionally have to offer. Consequently, distress No. 1 heavy melting steel has been sold down to $10.50 a ton. Early last week it became known that the Pennsylvania railroad had sold its heavy melting steel for over $12 a ton but this high price was paid presumably to balance a stock of No. 2 heavy melting steel by a buyer in the Wheeling district. Machine shop turnings are steady with small transactions ranging between $8 and $8.50. Railroad steel specialties appear scarce at $13.25 to $13.75. With all shipping points in the district now shut off on blast furnace material, borings and turnings are weak at $7 to $7.50.

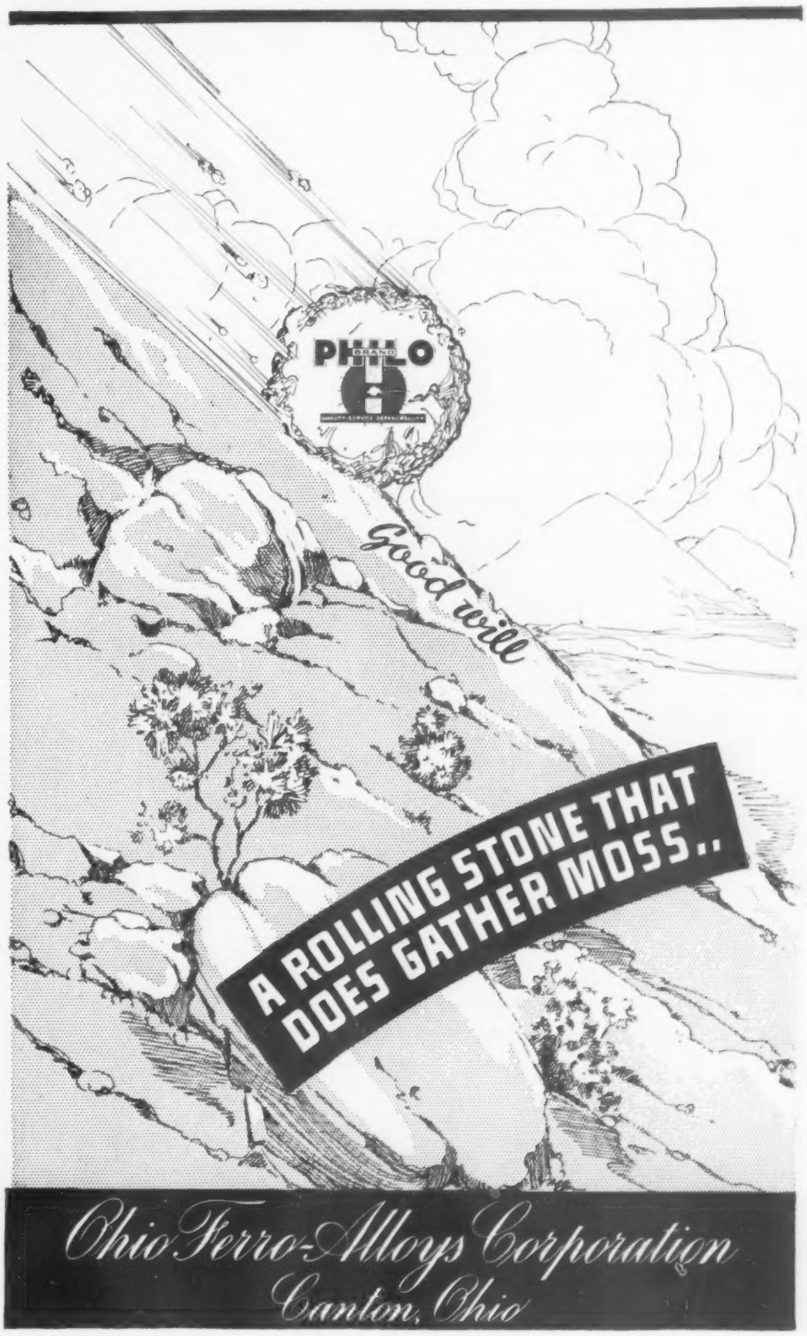
Cleveland—Shipments on contracts, in small lots, makes up most activity in steel and iron scrap. Weakness of prices in adjacent districts has caused downward revision of prices by about 50 cents per ton on a number of grades.

Chicago—Scrap is marking time, with prices unaffected by occasional small sales. Heavy melting steel continues $9 to $9.50 on the basis of last purchases, but no concerted buying movement by mills has appeared.

Boston—While loading for export is active, scrap buying is light. Close to 5000 tons of No. 1 and No. 2 scrap is being loaded for Poland and 1000 tons of motor blocks have been bought for barge shipment. Domestic buying is light, although the Worcester consumer is taking moderate shipments at $7.50 for No. 1 melting steel and $6.50 for No. 2.

Prices are lower on several grades. Heavy cast is off 25 cents a ton. Textile cast to consumers is down to $9.50 to $10 and forge fire scrap and skeleton steel are also inclined to be easier.

Philadelphia — Although melting steel and the principal grades of cast



scrap are unchanged, some price reductions are noted. Bids will be opened Aug. 22 by the local navy yard on 8400 tons of ferrous scrap, to be obtained from the dismantling of 17 destroyers.

Buffalo—While indications are that the largest consumer will come into the market for No. 1 and No. 2 heavy melting steel in September, it is hardly likely that there will be any real buying until that time. Buyers in New York are paying the equivalent of $10.25, Buffalo, for No. 1 heavy melting steel for loading at Albany for shipment abroad.

Detroit—Scrap remains quiet and with no change in prices on minor transactions. Prices hold steady at $7.75 to $8.25 for both No. 1 heavy melting steel and hydraulic compressed sheets, $5.50 to $6 for blast furnace borings and turnings and around $4.50 to $5 on machine shop turnings. No decided change in the market is expected either way for at least the remainder of this month.

Cincinnati—On the basis of lower bids on a recent iron and steel scrap list of the Norfolk & Western, quotations in this district were forced downward, heavy melting steel sagging 50 cents, at $7.00 to $7.50. Mills have not resumed buying and show no interest.

St. Louis—Steelmakers are buying no scrap and dealers have covered on recent sales. Prices are unchanged except for slight advances on knucklers, couplers, springs and steel car wheels.

Birmingham, Ala.—Buying of steel and iron scrap is in small lots and large users are out of the market. Prices are nominal and weak. Melters seem to have ample stocks.

Toronto, Ont.—Trading in iron and steel scrap is spotty with only a few special grades moving. Local dealers are shipping steel scrap to Hamilton in small lots, but otherwise there is little demand for heavy melting steel or turnings. Iron grades have a steady call in lots up to 50 to 100 tons with machinery cast favored.

Iron Ore

Iron Ore Prices, Page 52

Cleveland—Although the number of Great Lakes iron ore carriers in commission Aug. 15 was 149, a gain of 15 in a month, producers do not anticipate the tonnage to be shipped this year will exceed 25,000,000 tons, in contrast with earlier predictions of 35,000,000 to 40,000,000 tons. The total this year to Aug. 1 was 11,523,525 tons. For the entire 1933 season it was 21,600,000 tons.

Consumption last month, according to the Lake Superior Iron Ore association, was 1,121,584 tons below that of June. Further data on consumption and stocks:

	Tons
Consumed in June	2,721,449
Consumed in July	1,599,865
Decrease in July	1,121,584
Consumed in July, 1933	2,626,293
On hand at furnaces, Aug. 1, 1934	25,461,213
On Lake Erie docks, Aug. 1, 1934	4,499,858
Total at furnaces and Lake Erie docks, Aug. 1, 1934	29,961,071
Total Aug. 1, 1933	27,771,735

The association reports the following tonnages received this season to Aug. 1 at Lake Erie ports, shipments from those ports and dock balances:

	Receipts	Shipments	Dock bal. Aug. 1
Buffalo	871,273	1,707	855
Erie	488,891	493,805	121,163
Conneaut	1,554,931	1,860,513	1,548,867
Ashtabula	1,054,829	1,134,974	1,420,159
Fairport	582,347	586,796	387,403
Cleveland	1,966,618	1,303,126	658,910
Lorain	746,385	447,081	12,527
Huron	246,116	243,220	340,568
Toledo	435,940	261,315	9,406
Total	7,947,330	6,332,537	4,499,858
Year ago	3,823,902	3,257,686	4,792,192

Receipts at other lake ports:

	Tons
Detroit	313,816
Indiana Harbor	647,937
Gary	810,162
South Chicago	998,073
Sault Ste. Marie, Ont.	11,223
Hamilton, Ont.	142,921
Total	2,924,132
Year ago	1,239,555

Metallurgical Coke

Coke Prices, Page 51

Foundries in the Pittsburgh district are buying only small lots of metallurgical coke. The market for this grade is steady and unchanged at $4.60, Connellsville ovens, for common grades. Premium grades are $5.10 to $5.35, ovens. Furnace coke is steady at $3.60 for contracts and $3.85 for spot shipment.

Foundry coke shipments have shown a moderate gain at Chicago for the first half of August. The price continues $8.50, ovens for outside delivery and $9.25, delivered, Chicago. At Cincinnati by-product foundry coke shipments reflect the reduced melt and are at about the late July

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level. Several producers of by-product coke at Birmingham, Ala., have restricted production as demand has declined.

Warehouse

Warehouse Prices, Page 54

Pittsburgh—Steel bars at 2.10c, plates and shapes at 3.05c, and cold-drawn at 3.45c are steady and unchanged for shipment out of Pittsburgh warehouse, with 10 cents less allowed for out-of-town Pittsburgh deliveries. Warehouse orders are infrequent and small, many being less than the 400-pound minimum base.

Cleveland—Warehouses here have adjusted their price of No. 24 black sheets to 3.91c, down from 3.96c, in accordance with the recent reduction in the mill base. The market generally is quiet, with some sellers reporting a slight gain in orders and tonnage over the same 1933 period.

Chicago—Sales have been well maintained so far this month, some sellers noting a slight gain over July, but business remains well below second quarter levels. Prices hold.

New York—Warehouse volume during the first half of August is slightly heavier than the July rate, improvement being due mainly to an increase in small orders. Prices are unchanged with indications that black sheet quotations will not be revised in this territory.

Philadelphia—While the number of orders is being sustained, the daily tonnage of warehouse business here is under the July rate. One jobber reports the present daily rate as being 25 per cent under that of a year ago. Prices are unchanged.

Detroit—The first 15 days of August finds steel warehouse demand equal, and in some cases slightly better than the first half of July. Both July and August shipments of 1934 are ahead of the same months in 1933. Prices are unchanged.

Cincinnati—Sales from warehouse, showing minor fluctuations, are close to the July level. Industrial demand is broad but seasonally lighter. Prices

St. Louis—Buying from warehouse is light. Drouth conditions are expected to cut into rural buying in some sections but others have excellent crops and are relied on to buy generously.

Bolts, Nuts, Rivets

Bolt, Nut, Rivet Prices, Page 51

Automotive, jobber and railroad specifications for bolts and nuts are reported at Pittsburgh to be less this month than in July. Pittsburgh federal engineers took bids late last week on 4500 pounds of button-head rivets for Ohio river lock repairs.

At Cleveland prices are firm but business is falling off rapidly. Railroads are not buying; the drouth has affected implement business and jobbers are stocked. Leading interests say the only orders are coming from automobile manufacturers, and these are tapering.

The price of 70 off list on bolts and nuts and 2.90c, Pittsburgh or Cleveland, and 3.00c, Chicago, on large rivets is unchanged.

Semifinished

Semifinished Prices, Page 51

Slightly better demand for skelp is noted from some of the smaller nonintegrated pipe producers, this improvement sustaining a fair demand for tube rounds to be used for the manufacture of seamless tubing. Shipments of semifinished steel for tin plate producers continue to feature the semifinished market. Practically no improvement is noted in the movement of billets or wire rods.

Ferroalloys

Ferroalloy Prices, Page 52

Following closely the trend in steelmaking, ferromanganese specifications are light. A material improvement is not expected to set in before fall. The market is $85, duty paid, Atlantic and Gulf ports, the price prevailing so far this year. Domestic spiegeleisen, 19 to 21 per cent, is quiet at $26, furnace, on quantities up to 50 tons, and $24, on lots of 50 tons and over.

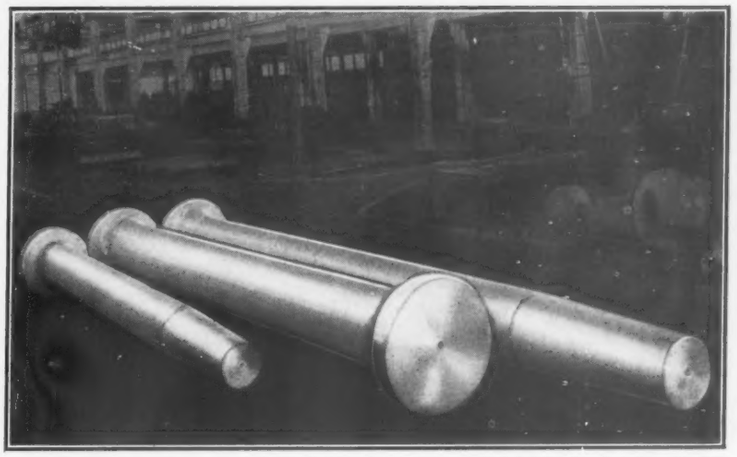
Nonferrous Metals

Nonferrous Metal Prices, Page 52, 53

New York—Most nonferrous prices held firm last week. Copper was more active but other metals were quiet.

Copper—Domestic sales averaged between 500 and 600 tons daily or slightly heavier than recently. Business has been mostly with producer-

QUALITY FORGINGS



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owned fabricators who have been in the market in a light way despite further recessions in demand for fabricated goods. The statistical position of the industry continues to improve.

Lead—Demand quieted but prices held. Little additional buying is expected this month. It is believed, however, that consumers are only a third to a half covered on their September requirements.

Zinc—Prime western zinc market has been quiet but firm. Some dealers were reluctant to do business at current levels but business volume failed to absorb all metal available at the 4.30c, East St. Louis, level. There has been no indication of selling pressure.

Tin—Straits tin advanced quickly to 53.00c at the start of last week on curtailment action by the International Tin committee. Sales were light and the metal was quoted off to 52.35c at the end of the week.

Antimony—Dullness continued but prices held.

Aluminum—Prices remained unchanged in a quiet market.

Battelle To Make Study Of Electric Furnaces

Detroit Electric Furnace Co., Detroit, makers of electric furnaces, has arranged with Battelle Memorial institute, Columbus, O., for an investigation of furnace construction and operation. The work at Battelle will be in charge of Harry B. Kinnear, metallurgist, and Chester R. Austin, refractories engineer. The program includes construction and operating features, and is expected to solve some metallurgical problems arising from the various applications of electric furnaces in ferrous and nonferrous fields, especially in customers' problems.

Less Machinery Is Made

From 1933 to 1931 the production of metal-working machinery in the United States was halved, according to the following data compiled from the biennial census of manufacturers:

Machinery—Class	1933	1931
Metalworking (other than machine tools), total	$13,197,141	$36,294,221
Rod and wirewkg.	230,234	1,887,847
Rolling mill	4,386,001	17,567,791
Sheet metalwkg.	7,117,310	13,580,271
Wire drawing	345,893	411,062
Other metalwkg.	1,117,703	2,847,250

Pacific Coast

Pacific Coast Prices, Page 51, 52, 54

San Francisco—(*By Air Mail*)—While awards were not heavy the past week over 73,000 tons of reinforcing bars, plates, shapes and cast iron pipe are up for figures. Bids have been opened on 400 tons of pig iron for the Mare Island, Calif., navy yard and for the Bremerton navy yard in Washington, under schedule No. 3024. Los Angeles will open bids Aug. 29 for 471 tons of 90-pound tee rails and 128-pound girder rails.

Unnamed interests booked 157 tons of reinforcing for a bridge in Kern county, California, for the state. Nevada Consolidated Copper Co., McGill, Nev., will need 500 tons for remodeling a smelter. Bids have been taken on 375 tons for the Los Angeles county flood control district, Los Angeles. Two substations at Pearl Harbor, T. H., up for figures Oct. 3, will require 500 tons.

The only plate award reported during the week involved 100 tons for four-horsepower locomotive boilers for the Fort Peck dam project in Montana, placed with an unnamed interest. Los Angeles has opened bids on 100 tons for a 300,000-gallon tank and on 290 tons for a 22-inch pipe line. So far this year 47,653 tons have been booked compared with 33,368 tons in the corresponding period last year.

Consolidated Steel Corp. booked 106 tons of shapes for a bridge in Kern county, California, for the state and 100 tons for a plant in Los Angeles for the Hughes-Mitchell Processes. New inquiries include 1000 tons for remodeling a smelter plant in McGill, Nev., and 500 tons for two substations at Pearl Harbor, T. H. Over 34,000 tons of shapes are pending.

American Cast Iron Pipe Co., Birmingham, Ala., was awarded 148 tons of cast iron pipe for Santa Monica, Calif. San Clemente, Calif., will open bids Aug. 17 for 430 tons of various sizes. Los Angeles has taken bids on 351 tons of 4 to 8⅝-inch black steel pipe, and is in the market for 380 tons of cast iron pipe for an outfall sewer.

Many Projects Pending

Seattle—While no important awards featured the Pacific Northwest iron and steel markets this week, considerable business is pending. About 16,000 tons of reinforcing bars for the Bonneville project and the Oregon coast bridges are to be placed within a few days and several large tonnages await award for the Grand Coulee dam.

Important projects, mainly federal, are up for bids within 30 days. Bureau of reclamation, Denver, will receive tenders Aug. 27 for three 16x12-foot radial gates, three motor driven gate hoists, four high-pressure gates with hoists, hangers and

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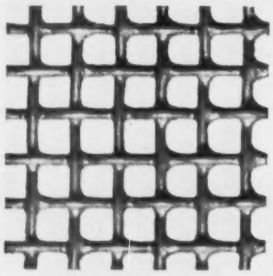

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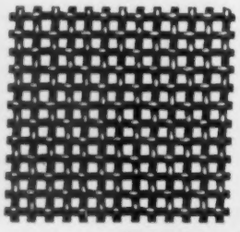

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valves and two plate steel outlet pipes for the Hyrum dam project in Utah. The same office will open bids Sept. 4 for 72 and 60-inch welded plate steel penstock and outlet pipes for the Pine View dam, Utah.

Bids will be opened Sept. 5 for 240 tons of reinforcing bars, 250 tons of steel sheet piling and liner plates, and 321 tons of metal for the Pine View project. About Aug. 31, United States engineer at Portland, Oreg, will receive tenders for preparing the site and relocating 9000 feet of railroad track, including a 600-foot tunnel, in connection with the Bonneville project, to cost $1,000,000. The government also is asking bids for spikes, nuts, bolts and washers for the 30-mile railroad extension to Coulee dam.

Siems-Helmers Inc., St. Paul, has the contract to reconstruct the damaged Northern Pacific bridge over the Cowlitz river, Washington. The job involves sinking three concrete piers and furnishing three new spans. Bids for the superstructure of the span to cross the Columbia river near Coulee damsite will be called within ten days by the state highway department. About 1600 tons of shapes will be required.

E. O. Holland, secretary, Washington state college, Pullman, Wash., will open bids Sept. 4 for a $260,000 power plant, reinforced substructure and structural frame. Elliott & Co., Seattle, has the contract for a 542-foot state bridge in Yakima county, involving 270 tons of shapes.

The wholesale jobbing trade has improved, plates and tubes leading. Prices are well maintained. The scrap market is featureless.

Steel in Europe

Foreign Steel Prices, Page 54

London—(*By Cable*)—Production of pig iron in Great Britain in July was 527,200 tons, from 99 blast furnace stacks, compared with 515,700 tons from 101 stacks in June. This was a gain of 11,500 tons. The daily rate in July was 17,006 tons, compared with 17,190 tons in June.

Influence of the summer holiday season is seen in reduced output of steel ingots. In July this was 718,200 tons, compared with 757,500 tons in June, a loss of 39,300 tons. The daily rate of production in July was 27,623 tons, and 29,134 tons in June.

Steel and iron imports in July totaled 126,364 tons, a gain of 28.362 tons over the 98,002 tons imported in June. Exports were 197,126 tons, a loss of 7013 tons from the 204,139 tons exported in June.

Steel markets remain quiet, but prospects for trade in the fall are good. Some hematite is being bought by Italy but the price is low. The Birmingham district is meeting considerable competition from material made on the Continent.

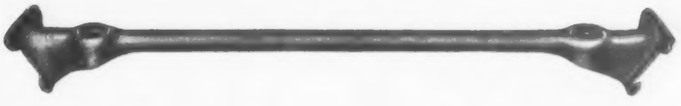
Continental markets are inactive. China and Japan are buying bars and shapes. Indications are fair for fall selling for export to the Far East. Steelworks in Poland are more active, owing to government orders.

Equipment

New York—Demand for machinery is dull. Most inquiry and buying is traced back to some of the many alphabetical government departments or the navy. Private industrial inquiry is light. Several hundred machine tools are required in the New York technical school program, large lists being out for the Bronx Vocational school, closing Aug. 27, and the Brooklyn Technical school, closing Sept. 4. Later equipment will be bought for the Staten Island and other vocational schools, the program requiring an expenditure of close to $1,000,000, financed by government loan. Bureau of supplies and accounts, navy department, Washington, will take bids Aug. 24 on an eight-spindle automatic screw machine.

Pittsburgh—Figures covering the cost of installing a 72-inch hot and cold continuous sheet strip mill for the Soviet government were being prepared last week by steel mill equipment interests. A Soviet commission is now in the United States inspecting various continuous strip mills. Reports say that installation will be made at Dnieprostroy, Russia, with cost estimated at approximately $15,000,000. It is expected that some American producer of steel mill equipment will be awarded the contract. In the meantime, inquiries for continuous hot strip mills for the Youngstown, O., division of Carnegie Steel Co. and the Great Lakes division of National Steel Corp., are being kept open. It is reported that several design details have yet to be completed on each. Caisson work is proceeding rapidly at both the Struthers, O., strip mill for Youngstown Sheet & Tube Co. and the Ford Motor Co.'s mill at Dearborn, Mich.

CROSBY STAMPINGS



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Construction and Enterprise

New England

NEW BEDFORD, MASS.—Revere Copper & Brass Inc., 24 North Front street, plans a 1-story castings shop, 167 x 190 feet, on North Front street, to cost about $40,000.

STERLING, MASS.—Town plans a waterworks plant and mains, to cost about $50,000 for which PWA loan has been approved. Fay, Spofford & Thorndyke, 44 School street, Boston, are engineers.

New Jersey

CAPE MAY, N. J.—City, R. B. Dean, city manager, has plans in progress for erection of a 750,000-gallon steel storage tank to cost $47,000. Remington, Vosbury & Goff, 509 Cooper street, Camden, N. J., engineers.

PATERSON, N. J.—Tenny & Hoffman Inc. has been organized by E. J. Tenny and Raymond Hoffman, 126 Market street, care A. I. Bluestein, representative, to manufacture tools and machinery specialties.

Pennsylvania

JOSEPHTOWN, PA.—St. Joseph Lead Co. plans to install additional dock facilities at its plant here on the Ohio river.

PENNHURST, PA. — Commonwealth of Pennsylvania, departmet of welfare, Pennhurst State School, Dr. Walter R. Krauss, superintendent, Pennhurst, Pa., will receive bids for erection of one-story pump house at Pennhurst State School, Pennhurst, Pa.

Ohio

MANSFIELD, O.—W. K. Miller and associates, 151 West Third street, have plans for a plant for the manufacture of glass-lined steel barrels, to cost more than $28,000.

YOUNGSTOWN, O. — Youngstown Steel Door Co., maker of steel doors and sides for railroad cars, is considering building an addition for storage of materials.

Michigan

DETROIT — American Industrial Chemical Corp. has been incorporated by Margaret Putnam, 4134 Dickerson avenue, to deal in machinery.

DETROIT—Goodspeed Products Corp., 622 Rivard street, has been formed to deal in electric tools, by Elvin S. Goodspeed, 18300 Oak drive, Detroit.

DETROIT—Giffels & Vallet Inc., 606 Marquette building, engineer, has completed plans for a brewery to be erected at East Jefferson and Dequindre avenues, Detroit, for the Jefferson Brewing Co.

DETROIT—Welding Accessories Co., 1627 West Fort Street, has been incorporated to deal in welding equipment, by Benjamin H. Bowlus, 17592 Wisconsin avenue.

DETROIT—Chevrolet Motor Co., 1840 Holbrook avenue, has let general contract to O. A. Burke Co., 439 Penobscot building, for a 1-story machine shop addition, to cost about $30,000. Albert Hahn Inc., New Center building, is architect.

Illinois

CHICAGO—Atmos Corp., 3701 South Morgan street, has been incorporated by Ivan Haymanson, Herman Haymanson and Dina Haymanson to manufacture air conditioning equipment. Correspondent: Atmos Corp., 3701 South Morgan street.

CHICAGO—Paul Gerhardt Sr., 64 West Randolph street, has plans nearly completed for two new distilling plants to be erected in Illinois for a company whose name is temporarily withheld. Boiler plant and electrical equipment is included in each. Cost of each is about $300,000.

Florida

VERO BEACH, FLA.—Indian River Growers Inc., John Corsa, president, is planning to construct a packing plant to cost about $20,000, and will install drying and polishing machinery.

Georgia

ATLANTA, GA.—City has low bid from T. C. Wesley & Son, Red Rock building, for extension to municipal garage for machine shop, 92 x 99 feet.

FORT VALLEY, GA.—Fort Valley Bottling Co., W. G. Brisendine, president, plans improvements to plant. Pringle & Smith, architects, Norris building, Atlanta, Ga.

Kentucky

GUTHRIE, KY. — Pittsburgh-Des Moines Steel Co., Des Moines, Iowa, has contract for waterworks, including pumps, elevated tank and pipe at $65,000. Morris Forge & Drilling Co. Knox-

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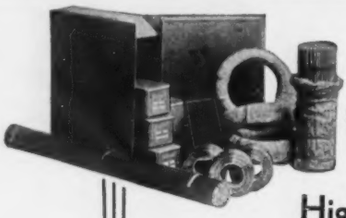

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ville, Tenn., has contract for two deep wells.

LOUISVILLE, KY.—Louisville Cabinet & Furniture Co. has been incorporated by Joseph F. Kasper, 1719 Deerwood, and John W. Watkins, to operate woodworking plant.

Maryland

SPARROWS POINT, MD.—Service Stores Corp. plans coke storage plant, including two reinforced concrete tanks with capacity of 150 tons each, two 20-ton truck scales, and elevating equipment with capacity of 40 tons per hour.

Mississippi

CHARLESTON, MISS. — Mississippi Clay Co., J. W. Saunders, is planning to erect a clay plant. Machinery will include grinding, mixing and blending mill. Contract for erection of mill has been awarded to C. A. Hupp, Defiance, O.

MASHULAVILLE, MISS.—Board of trustees, agricultual high school, opens bids Aug. 24 for erection of light plant.

North Carolina

ELIZABETH CITY, N. C.—Tupelo Veneer Co. has been incorporated with $25,000 capital by W. H. Jennett Jr., and J. W. Jennett, to operate a woodworking plant.

South Carolina

CHARLESTON, S. C.—Santee-Cooper authority, Mayor Burnet R. Maybank, is preparing new application to PWA for funds to build proposed power plant and electric system in lower state.

Missouri

CARTHAGE, MO.—City has plans partially completed for waterworks, including water softening plant and well supply, to cost $100,000. Will probably call for bids in about a week. Black & Veatch, consulting engineers, Mutual building, Kansas City, Mo.

HANNIBAL, MO.—Board of public works, receives bids Aug. 27 for 9375 KV-A turbo generator and one surface-type condenser for same, together with auxiliary equipment. Baumes-McDevitt Co. Inc., Railway Exchange building, St. Louis, engineer.

Arkansas

LEACHVILLE, ARK. — City plans $45,000 waterworks. T. H. Allen, McCall building, Memphis, Tenn., engineer.

TUCKERMAN, ARK. — City plans $50,000 waterworks. F. A. Pritchett, engineer, Wallace building, Little Rock, Ark.

Oklahoma

OKLAHOMA CITY, OKLA. — City council has ordered election for Oct. 2, on a $4,000,000 bond issue for a gas system.

OKLAHOMA CITY, OKLA.—City, T. G. Banks, superintendent and engineer, Oklahoma City water department, will expend about $1,000,000 in connection with distribution and purification facilities.

Texas

ARLINGTON, TEX.—Board of grand trustees of the O. E. S. home will receive bids Aug. 23 for drilling well, furnishing and installing pump, and furnishing and erecting tower and tank with capacity of 50,000 gallons. L. E. Tennison, treasurer of board, Clifton, Tex.

DEL RIO, TEX.—City has $77,000 loan and grant for installing waterworks. John G. Long, mayor; Paul Blevins, engineer.

FARMERSVILLE, TEX.—City, Dan Rike, mayor, will receive bids Aug. 24 for constructing waterworks improvements, including spillways, pipeline, and pump and motor. Myers, Noyes & Forrest, engineers, 2204 Tower Petroleum building, Dallas, Tex.

HOUSTON, TEX.—Flanigan Distilling Corp. has been incorporated by F. R. Flanigan, 3103 Fannin street, and S. O'Neil, to operate a distillery.

MARBLE FALLS, TEX.—City plans waterworks system; has $43,000 allotment approved. H. R. F. Helland, engineer, First National Bank building, San Antonio, Tex.

OVERTON, TEX.—Rotary Bit Co. Inc. has been incorporated by Roy M. Davis and H. G. Chancey.

PARIS, TEX.—City voted approval of issuance of $70,000 bonds for improvements and repairs to sewage disposal

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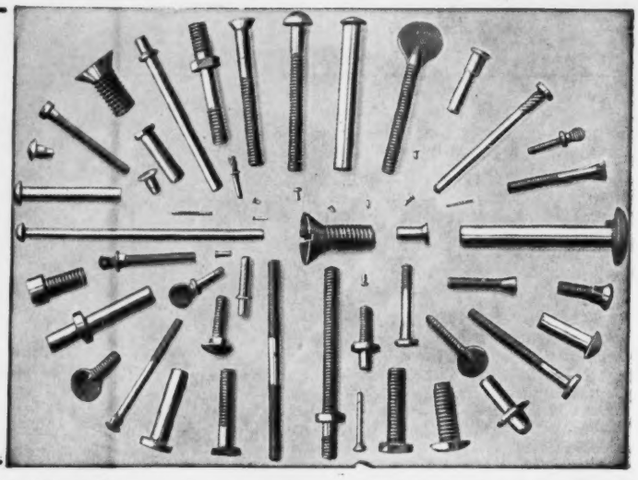

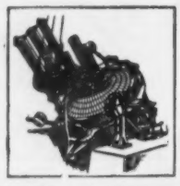

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plant, including construction of two plants.

PORT ARTHUR, TEX.—City has loan and grant of $116,000 for installing waterworks.

RICHLAND SPRINGS, TEX.—City has loan and grant of $30,000 for installing water distribution system, including 50,000-gallon elevated tank. S. J. Bross, engineer, San Saba, Tex.

WACO, TEX.—City, N. O. Hultgren, city manager, is planning to make a survey of the cost of installing a light plant.

Wisconsin

FONTANA, WIS.—Palmer Boat Co., builder of power boats and speed craft, has started work on a new factory, 75 x 120 feet, costing about $25,000, with equipment. It replaces the shop recently burned. Don Palmer is manager. (Noted July 23.)

JEFFERSON JUNCTION, WIS. — Ladish-Stoppenbach Co., Milwaukee, has let general contract to Klug & Smith Co., 111 East Wisconsin avenue, Milwaukee, to design and build a malting plant kiln addition here, 30 x 105 feet, 67 feet high. Equipment has been placed with Galland-Henning Co., Milwaukee.

MILWAUKEE—J. Greenbaum Tanning Co. has plans by Richard A. Kaupert, consulting engineer, for a 2-story, fireproof extension, 70 x 120 feet, at its No. 3 plant at 2625 Greeley avenue.

MILWAUKEE—Electrical Connector & Mfg. Co., South Milwaukee, successor to Milwaukee Tool & Forge Co., W. D. Kyle, president, is having plans prepared for a new factory building to replace plant recently destroyed by fire. Considerable machinery and equipment was also destroyed, making it necessary to purchase new equipment.

RACINE, WIS.—Nelson & Co., 1550 Yout street, has been awarded general contract to build a 2-story factory addition for S. C. Johnson & Sons, 1012 Sixteenth street, manufacturer of automobile and furniture waxes, finishes, and cleaning compounds.

RACINE, WIS.—City council voted to accept federal loan of $545,000 and grant of $205,000 for construction of sewage disposal plant. Plans have been completed by Alvord, Burdick & Howson, consulting engineers, 20 North Wacker drive, Chicago.

RICE LAKE, WIS.—William Bros Boiler & Mfg. Co., Minneapolis, is successful bidder for furnishing new boiler and steel stack for improvements to power plant of American Excelsior Corp. here.

SEYMOUR, WIS.—City council will ask bids soon for construction of waterworks and sewerage system costing $120,000 for which federal fund of $110,000 has been allotted. A. E. MacMahon, Menasha, Wis., is consulting engineer.

Minnesota

BRAINERD, MINN.—Northwest Paper Co. will build a water filtration plant at its paper mill, to cost $35,000.

FAIRFAX, MINN.—Citizens voted July 31 to build a municipal light and power plant, including diesel generating equipment and distributng system. A. E. Carver is village clerk.

MINNEAPOLIS—General Mills Inc., Chamber of Commerce building, plans construction of a 1-story addition to its laboratory building at Sixth avenue, South and Second street, including laboratory equipment.

WORTHINGTON, MINN.—City council will soon call for bids for a turbine generator and other equipment to cost $29,000. W. H. Buchan is city clerk. Charles Foster, 508 Sellwood building, Duluth, is consultoing engineer.

South Dakota

DEADWOOD, S. DAK.—Homestake Mining Co. is building a new steam-electric station to replace present substation west of Kirk, to be known as the Kirk power plant, to cost approximately $1,000,000. The new plant will contain three steam boilers and space for a fourth boiler to be installed later. Generators from old station will be moved to new plant, and a new generator added.

Iowa

OELWEIN, IOWA—Chicago Great Western railroad, which recently obtained 11 locomotives when it bought the St. Paul Bridge & Terminal Co. at St. Paul, has transferred two of the locomotives to its Oelwein shops to be overhauled. The purchase included 75 miles of railroad, stock switching yards and depot.

DUBUQUE, IOWA—Dubuque Packing Co. plans construction of an addition to its packing plant at Sixteenth avenue and Sycamore street.

Nebraska

FREMONT, NEBR.—Department of utilities, E. M. Hill, secretary, will take bids until Aug. 22 for a 2100-gallon per minute deep well turbine pump, a motor-driven centrifugal pump, vertical electric-driven sump pump and other equipment.

Montana

CHINOOK, MONT. — Utah-Idaho Sugar Co., Salt Lake City, Utah, will build a sewage treatment plant and a pulp storage building at its Chinook sugar plant.

EKALAKA, MONT.—Olive B. Davis, city clerk, will take bids until Aug 23 for a municipal waterworks system to cost $50,000, including electric motor vertical direct connected to turbine pump, pumping equipment, cast iron pipe, etc. Roy N. Stewart, Miles City, Mont., engineer.

FAIRVIEW, MONT.—I. P. Lanouette, city clerk, will take bids until Aug. 24 for a municipal waterworks system, to cost $40,000, including electric motor vertical direct connected to turbine pump, and 100,000-gallon elevated steel water tank. oy N. Stewart, Miles City, Mont., is engineer.

Pacific Coast

SANTA ROSA, CALIF.—Bids will be asked shortly by the Santa Rosa Meat Packing Co., J. B. Humphrey, president, for alterations to meat packing plant, including new machinery and equipment.

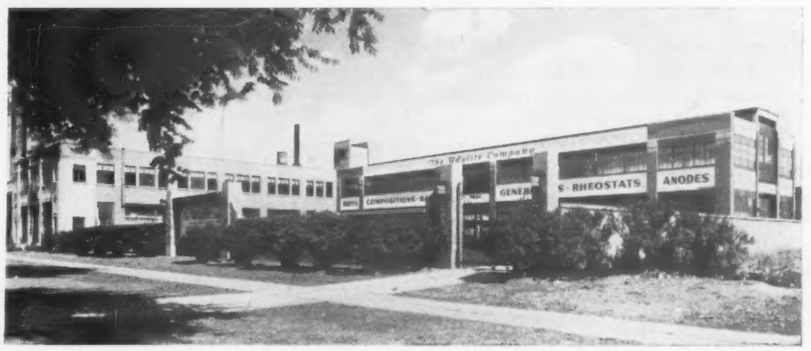
STOCKTON, CALIF.—Eastside Co-operative Winery is building a $150,000 plant at Lodi, Calif. It is just south of another huge plant recently completed, the Roma Winery. E. J. Mettler is secretary-treasurer.

LONGVIEW, WASH.—Weyerhaeuser Timber Co. plans expansion of its pulp plant by a unit with capacity of 175 tons a day.

PULLMAN, WASH.—Bids will be opened Sept. 4 by E. O. Holland, secretary of Washington State college, for a power plant to cost about $260,000.

SEATTLE—Joseph Wohleb, Chambers building, Olympia, Wash., architect, is preparing plans for addition to plant of the Century Brewing Co., 3100 Airport Way, Carl Heigenmooser, plant superintendent, to cost $100,000.

SEATTLE—Wind Harvester Inc., 2703 Forty-sixth street, Southwest, has been incorporated with $100,000 capital to improve combine harvester machinery. Papers were filed by H. T. Fitch, 916 Insurance building, for W. C. Steele and associates.



COINCIDENT with a change of name from Udylite Process Co. to The Udylite Co., this company has occupied its new general office and laboratory building at 1651 East Grand boulevard, Detroit. Since the beginning of 1932 the Udylite Co. has been engaged in promotion and sale of electroplating supplies and equipment in addition to its process for cadmium plating. This development dictated the change in name to cover the enlarged scope of its business. The company started in a small way in 1919 and has grown steadily, removing to larger quarters several times. The present plant has treble the floor space of the former quarters and thus provides for further growth. The laboratories have been made more complete than ever. Though name and location have been changed, the company's policies remain the same and service has undergone no alteration

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